

# Don't stop our mackerel fishing!

ENGLISH hand-line fishermen in Cornwall were last month urging their Ministry to promise that they will not be stopped fishing if the big ship fleet working the area takes the total mackerel catch over the limit.

The mackerel fishery off the English south-west coast is now joined by purse seiners, large stern trawlers and pair trawlers. The season that should stretch from September through to about March. Catches had been restricted to 3½ tons a day per crew member. Even then it was feared that the big fleet might haul up 100,000 tons in the first five weeks of autumn fishing.

Now the limit has been raised to five tons!

In the north of the British Isles, more than 100 Scottish vessels were fishing for mackerel last month.

Most of their catches were sold direct to a fleet of Eastern European factory vessels.

The eventual catch was expected to be around 100,000 tons, double last year's total.

## Warning from Norway

THE heavy mackerel fishing by EEC and Norwegian boats is hitting the North Sea stock hardest of all, according to biologist Erling Bakken of the Institute of Marine Research in Bergen.

He has warned that there is again a risk of overfishing, as happened in 1977, despite all the advice of fishery research workers.

Norway and the EEC agree that the 1978 mackerel fisheries should be concentrated in the north-west area of the North Sea.

A search for mackerel north of the 60th parallel made by the Norwegian Fisheries Directorate has revealed nothing of consequence so far.

With very good catches along the Norwegian coast (about 13,500 tons by the third week of August), scientists fear that the mackerel stock may be under too much pressure to produce the spawn which, it is hoped, will rebuild the depleted North Sea stock by 1981.

As grounds for their fears, the scientists point to the very large size of mackerel being sold in Norway. These are eight or nine years old. There are very few young fish, indicating ominous gaps in the age composition of the North Sea stock.

# SRI LANKA PAYS FOR PAST MISTAKE

SRI LANKA has had to pay nearly two million US dollars as compensation to Norwegian shipyards and to a firm of brokers because of a trawler building contract entered into by the previous government in 1976.

FNI correspondent Nalin Wijesekera reports that the Norwegian government took up the claims for compensation. The contract was valued at about Rs200 million (26.5 million) and was for ten 30 metre long trawlers.

It was signed in Oslo at about the same time that Japan offered to build

ten trawlers for Sri Lanka for only Rs60 million.

A payment of Rs3 million to the trading company which negotiated the contract is part of the Rs27 million compensation which the present Sri Lanka government has agreed to pay to get out of the deal.

When the purchase of the ten trawlers was under discussion, the Norwegian aid organisation NORAD expressed doubts

about the type of vessel planned. It was, NORAD suggested, not really suitable for the fishing requirements of Sri Lanka.

Norway was also prepared to evaluate the trawler project in 1976 on an inter-governmental basis and then arrange contracts for suitable vessels. This offer was not accepted.

The original claim by the yards and the broker amounted to Rs37 million. But a Rs10 million deduction was agreed after negotiations in Oslo between the builders, representatives of the Norwegian government and a three-member team from Sri Lanka.

# Look into Cat Power

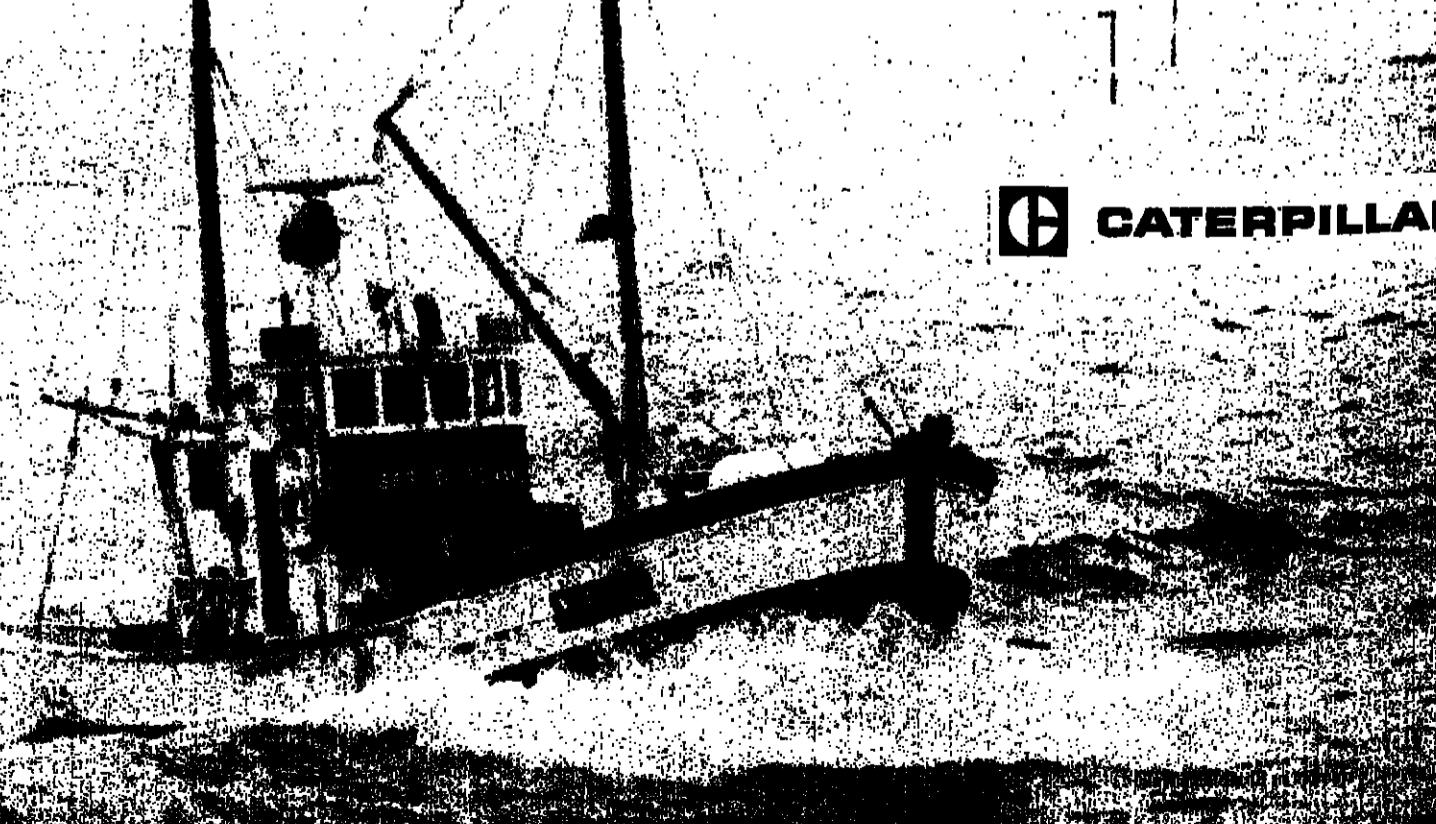
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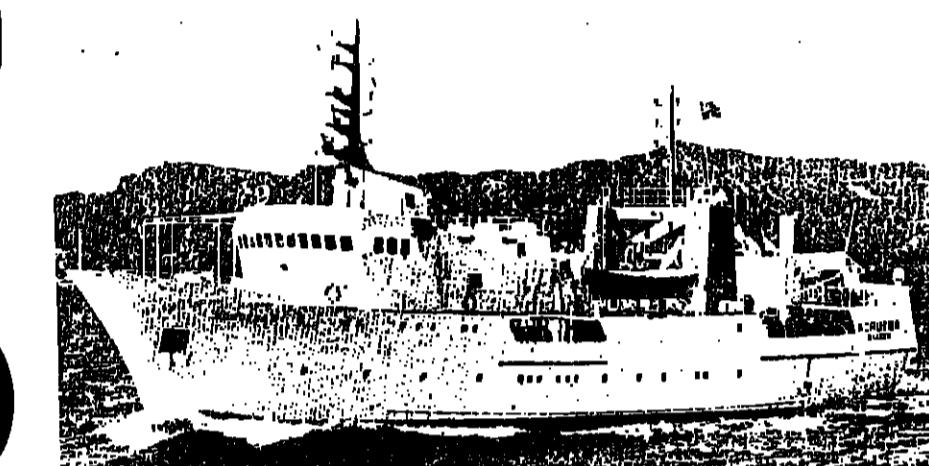
# fishing news international

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# NORWAY'S GIFT SHIP



THE NORUEGA — £3 million donation from NORAD to Portuguese fisheries research

NORWAY HAS given away another modern fishery research ship, this time to Portugal.

The *Noruega* is a Nansen-class ship displacing 950 tons. Her design was developed by the Fisheries Directorate in Bergen in collaboration with the Norwegian aid organisation NORAD.

Other ships in the class include the *Dr. Fridtjof Nansen*, which has carried out survey work off Mozambique, the Seychelles and Sri Lanka, and the *Bien Dong*, given to Viet Nam.

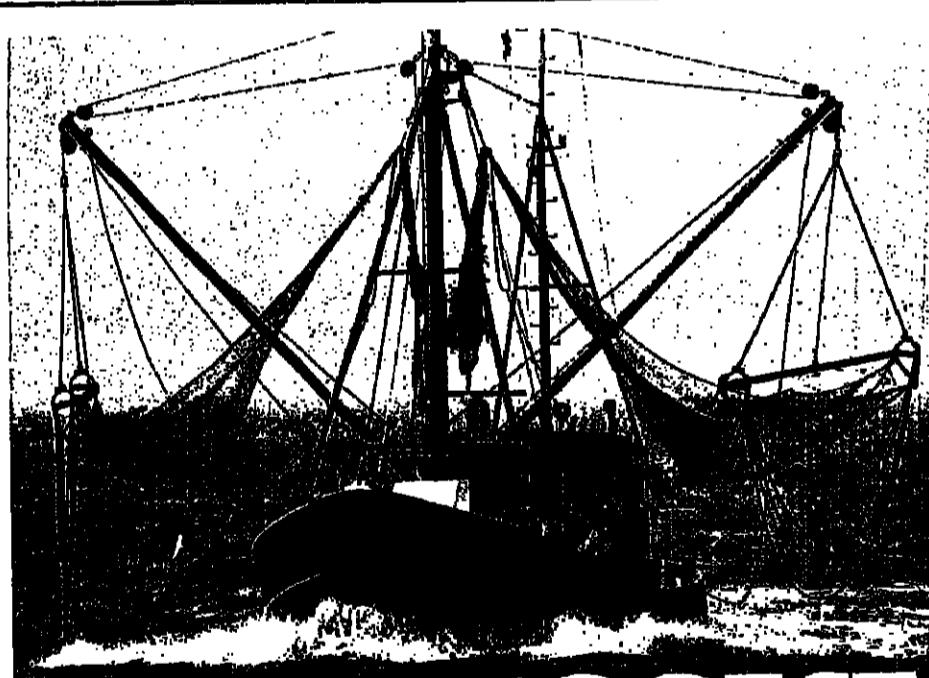
The *Noruega* has been designed for fisheries and oceanographic research and is equipped with fish sampling, biological and hydrographic laboratories.

### Symbol of brotherhood'

Accepting the ship from NORAD, Portugal's Ambassador to Norway, Fernando Reino, saw her as a symbol of brotherhood and co-operation between two small nations.

She would, he said, be of huge assistance to the Portuguese industry in assessing stocks in the 200-mile economic zone off mainland Portugal and around Madeira and the Azores.

Portugal's Director of Fisheries, Antunes Correira, said the *Noruega*'s first task will be to map and measure sardine stocks.



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## Uruguay courts the investors



WFA helps develop method for small boats — Page 40  
  
New sonar system  
German aid to fish finding — Page 44

THE GOVERNMENT of Uruguay is encouraging investment in fishing by exempting investors from consular fees, import duties and credit and property transfer tax.

Landings in 1978 are expected to be about 65,000 tons and exports of products from these

landings may total US\$620 million.

Uruguay has obtained a loan of \$28 million to help finance developments in the industry.

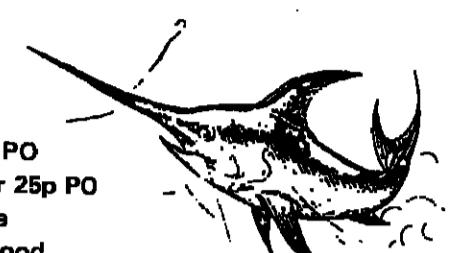
A Dutch-Uruguayan consortium has been formed by Zeechemie, Corporacion Uruguaya de Pesca, Pesca Sur, and Compania Industrial Pesquera to invest some \$40 million in a fishing complex.

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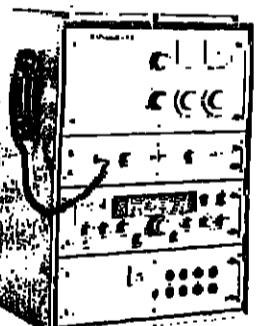
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halibut  
puts  
chefs in  
the soup**

## 225-POUNDER SETS A FIVE-STAR CHALLENGE

CHEFS AT the five-star Carlton Hotel in Bournemouth, England, faced a culinary challenge when their usual supply of fish was supplemented by a monster halibut.

Caught off Aberdeen, Scotland, the halibut had a gutted weight of 193 lb and was estimated to have weighed about 225 lb when

landed aboard the boat.

Chef de cuisine Roger Chant said he had never seen a fish so big.

With second chef Peter Bentley, and other helpers, he manhandled the halibut into the kitchen. Then, when problems of cooking it were solved, it appeared in varied dishes in the hotel restaurants.

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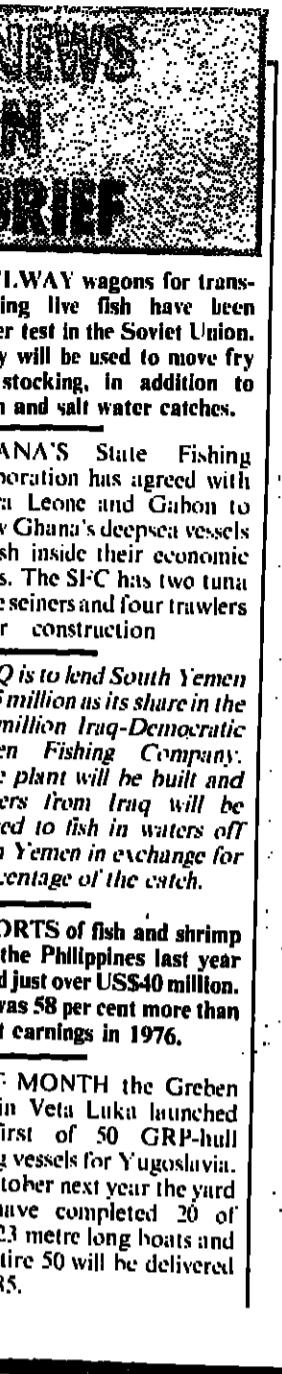
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RAILWAY wagons for transporting live fish have been under test in the Soviet Union. They will be used to move fry for stocking, in addition to fresh and salt water catches.

GHANA'S State Fishing Corporation has agreed with Sierra Leone and Gabon to allow Ghana's deepsea vessels to fish inside their economic zones. The SFC has two tuna purse seiners and four trawlers under construction.

IRAQ is to lend South Yemen \$12.5 million as its share in the \$30 million Iraq-Democratic Yemen Fishing Company. Shore plant will be built and trawlers from Iraq will be allowed to fish in waters off South Yemen in exchange for a percentage of the catch.

EXPORTS of fish and shrimp from the Philippines last year earned just over US\$40 million. This was 58 per cent more than export earnings in 1976.

LAST MONTH the Greben yard in Veta Luka launched the first of 50 GRP-hull fishing vessels for Yugoslavia. By October next year the yard will have completed 20 of these 23 metre long boats and the entire 50 will be delivered by 1985.



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## Taiyo to help China move out to sea

JAPAN'S giant Taiyo fishing company is to help China modernise her fishing industry.

Initially, it will assist in a programme of Chekiang province. This includes building a port complex and creating a large pelagic fishing fleet.

With technical assistance from the world's top fishing nation, the Chinese are hoping to carry out a thorough reorganisation of their fishery industries, from the present heavy concentration on inland fresh water supplies to ocean hunting in the Yellow Sea and East China Sea.

Although this will increase competition with the Japanese for limited sea resources, it could open up an enormous fishing vessel market for Japan's shipbuilding industry.

The Chekiang programme alone may require some 100 new vessels ranging in size from 140 to 200 tons. Other vessels mentioned include a factory mother ship.

Cooked and packed shrimps being placed in an IOF freezer in Cochin. Thanks to increased orders from Japan and improvements in the US market, shrimp exports could soon be providing a big boost to India's fish industry. FAO picture.

# SHRIMP SET TO BOOST INDIA FISH EXPORTS

## Promising increase in Japan order

THE EXPORT outlook for Indian seafoods in 1978 has brightened considerably with increased bookings of shrimp from the industry's biggest overseas customer, Japan.

This year's shrimp catch is said to be better than last year's, while overseas demand is good. Prospects for the rest of the year are still better, reports FNI correspondent Trevor Diserberg.

The major boost to exports comes from Japan as a result of the present strength of the yen in terms of the dollar.



current fiscal year, export earnings totalled Rs 490.3 million, against Rs 426.2 million in 1977.

This year's shrimp catch is said to be better than last year's, while overseas demand is good. Prospects for the rest of the year are still better, reports FNI correspondent Trevor Diserberg.

In March-May, the first quarter of the

Indian exporters are realising higher prices in dollars for all three choice varieties, headless white, headless tiger and flower.

### Rise expected

Since Japanese buyers' inventories are reported to be low and buying in Japan is more active in September, October and November, sales are expected to rise still further in these months.

Steady buying is reported from Europe. The United States market is somewhat sluggish but is expected to pick up soon.

NORWAY'S fleet of large purse seiners had an unexpected bonanza last month when they found a stock of fat capelin west and south-west of Jan Mayen Island.

The island belongs to Norway and lies roughly halfway between the northern Norwegian coast and Greenland. Ten years ago purse seiners from Norway and Iceland travelled there to harvest what was left of the summer run of Atlantic-Scandinavian herring.

First news of the fish came when the purse seiner *Meløyvar* brought in 1,300 tons. Within a few weeks more than 15,000 tons had been taken. The bonanza has helped revive interest in establishing a 200-mile economic zone around Jan Mayen.

Norway has argued for a median line but Iceland has disputed this on the grounds that Jan Mayen is not really inhabited, except by weathermen.

## PUNJAB ACTION PLAN

THE government of Punjab province, Pakistan, has drafted an action plan for 1978/79 to implement 13 schemes for inland fisheries. The fisheries department in the province aims to stock 3.8 million fish seed over the yearly to June 1979.

## Britain fights EEC's deal

## with Spanish

FOLLOWING negotiations in Brussels last month, the number of Spanish vessels licensed to fish in EEC waters has been increased from 121 to 240. This amounts to about two-thirds of the Spanish fishing craft that have been operating within the EEC framework agreement.

Other good news for the Spanish industry was that a court in Bordeaux, France, found in favour of several vessels arrested in June. It ordered that the value of fish confiscated be refunded and nets returned. The decision was based on the treaty signed between Spain and France in 1966.

The decision affects eleven vessels detained in French ports, one in Ireland and two recently arrested there.

Spain has been in dispute with her fellow members of the EEC over her quota share.

Under pressure from other EEC members, British Fisheries Minister John Silkin eventually accepted the increased licences for Spain on a short-term basis. But he refused to agree to accept them within a five-year framework agreement.

Only a few days later, however, the United Kingdom objected to the new arrangement on the grounds that agreements between the EEC Commission and third countries should not be completed until there is agreement within the EEC on the allocation of fish stocks.

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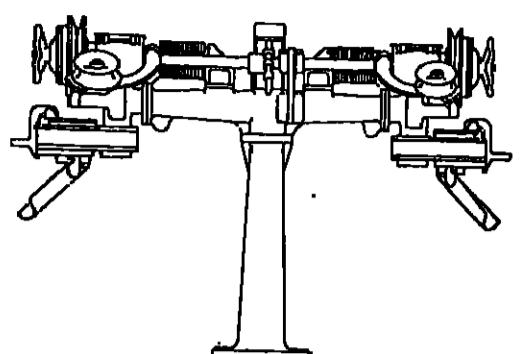
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**BIG YEAR  
FOR NEW  
ZEALAND**

REVIEWING the year ended March 1978, the Fishing Industry Board describes it as the most significant in the history of the New Zealand industry.

A number of government actions removed or helped to overcome many of the constraints that previously hindered the industry's development. Substantial incentives were offered in the 1977 budget. With the passing of significant fisheries legislation, these did much to convince people in the industry that its economic potential and its problems were being recognised.

"These actions," commented the Board in its annual report, "do not overcome all the problems, and in some cases have created others. Nevertheless, the industry is better placed than ever before in its history to face the future with confidence."

Dunmore East is the sole landing port under the "survival quota" scheme. A port committee there will monitor catches. Fishing will take place on five nights a week and the quota for each night will be two crans (about 360 kg) per man. Manning rules are six crew for a 65 to 75 ft. boat, seven for 75 to 80 ft. and eight for a boat over 80 ft.

If any boat takes over its quota on any night, the excess will be allocated among boats which have not reached their quota.

Vessels with an excess catch have to radio others in the vicinity to make arrangements for distributing the catch.

The IFO has also called for the establishment of a team of fishery protection officers. It suggests that any vessel longer than 24 metres (78.7 ft.) b.p. should be required to carry a fishery protection officer aboard while it is fishing inside the Irish 200-mile zone.

The survey team will pick one or two possible sites, and a second team will arrive later this year to make a final decision.

**Irish bring in a  
'survival quota'**

FROM OCTOBER 1, the 8,000-strong Irish Fishermen's Organisation is operating its own system of management and control over herring catches in the Celtic Sea.

A "survival quota" has been made necessary, it says, because of the serious danger to the resource and the attitude of the Minister for Fisheries and his officials to IFO draft proposals.

The IFO points out that since the closure of the Celtic Sea in early 1977, Dutch trawlers have been taking 15 per cent herring from the area under a five per cent by-catch agreement. Bearing this in mind, the IFO prepared a management plan based on a total allowable catch of 3,000 tons for the period.

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**Japan  
surveys  
Argentina  
bases**

A JAPANESE survey team arrived in southern Argentina last month to investigate areas for a fishing base. They represent the five-company consortium (Nippon Suisan, Nichiro, Talyo, Hoko and Kyokuyo) which has an agreement with the government of Argentina to develop Patagonia fish resources.

Talyo and Nippon Suisan carried out a test fishing operation off Patagonia in May. This was encouraging and led to preparations for constructing a base and processing plant.

The survey team will pick one or two possible sites, and a second team will arrive later this year to make a final decision.

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"Fishing News International" provides full and up-to-date information about the activities of fishery industries world-wide.

It reaches and serves fishermen, fishing companies, processors and distributors in more than 160 countries and territories. It circulates among members of governments and international organisations, and among fishery administration and research workers.

Readers also include designers and builders of fishing craft, makers of fish finding instruments, catching gear and processing machinery, consultants, operators of fishery protection services, and the many other people engaged in an industry that is harvesting and handling 73.5 million tons of aquatic creatures and plants a year.

**TURNAROUND IN A  
BRITISH  
FISHERY****comment**

THE USUAL relationship between marine scientist and fisherman might be briefly expressed as informed caution restraining commercial optimism. But in fisheries these days, many things are being turned upside down. And in one area at least we have a group of fishermen criticising fishery research establishments for talking "dangerous nonsense" about the state of a resource that is being increasingly heavily fished.

Mackerel is the fish and the area is off the south-west coast of England. Developments there have been extensively reported in *FNI*. As cod and herring fishing have declined, the mackerel has risen to prominence and is now the largest volume catch in the British industry.

But the increase has gone mainly into the holds of the big trawlers that have lost cod and of Scottish purse seiners and other high-performance boats that have lost herring. And from these vessels almost all the fish moves straight to export markets, frozen and often in factory ships that buy direct from the catchers.

This, as we have said before, is no unhealthy development as fisheries extend to 200 miles and take in species that have no big outlet in the coastal country. But in England, the newcomers and their customers are seen as greedy and destructive interlopers by the small-boat fishermen who for years slipped lightly into the mackerel. Their catches have also

gone up, but they fear for their future if the total haul is not kept strictly within safe limits. The problem is to decide on what is "safe."

Acting on advice from ICES (which is made up of European fishery scientists), the United Kingdom set total quotas which reflected new knowledge of the size of the south-west mackerel resource. To restrain the incoming large boats, the quota per man was set at 3.5 tons a day. Last year the south-west fishery contributed the major share of a record UK mackerel haul of 188,000 tons.

In the eyes of the small-boat men, this was already taxing the stock. Not so, said the scientists. On their advice, the government decided this year to allow a quota

of five tons a man. New information, not available when earlier assessments were made, indicated that the maximum catch within EEC waters might be raised from a recommended 250,000 tons to 460,000 tons.

The local fishermen dispute this optimistic assessment. They have protested, pointing to the sad example of the herring stocks. They allege that it was misleading information from scientists that led to the near-depletion of the North Sea herring resource.

They may yet get more restraint over fishing. But not so much through their arguments. So many vessels and fishermen have converged on the area that the sheer size of the effort may force a cut in the quota per man.

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**Nordsee drops  
Canada plan**

THE BIG German fishing company, Nordsee of Bremerhaven, has dropped plans to buy a controlling interest in a Newfoundland fish factory because the Canadian government refused to issue licences required for five Nordsee trawlers.

Slow processing of its application to operate in Canada also put off the German company.

The deal would have brought millions of dollars and at least 500 full-time jobs to the Ocean Harvesters factory in Harbour Grace. But leaders of Newfoundland's fishermen's union feared that entry of Nordsee and its big trawlers would cut into the cod stock which provides the main supply of raw material to the province's inshore fishery.

Acceptance of the Nordsee proposals would have brought a rush of other companies into the Canadian fishing industry, said union leader Richard Cashin.

Nordsee had been left with no choice but to withdraw, said Ocean Harvesters president Alec Moore, because "Canada has no fisheries policy" and no guidelines had been laid down by the federal government for the takeover envisaged.

**A NEW FOUND  
BRIGHT SPOT!**

TEN YEARS ago fishing was a badly depressed industry in Newfoundland; today it is one of the few bright spots in a generally dismal economic scene.

In the closing years of the 1960s, fishing was coming to be regarded as poorly-paid drudgery. "Now fathers and sons are going back," said an official of the province's fishermen's union.

Landings and earnings are rising. There is a new surge in boatbuilding.

One of the reasons for the revival is the price now being paid for codfish. In 1968, cod was

selling for a derisory three cents a lb. which was below what fishermen needed to cover costs.

Now it is selling for 18 cents, still low by European standards but offering the prospect of steadily improving earnings.

It is estimated that at least 24,000 Newfoundlanders earn their living from fishing and fish handling.

Much of the credit for the improvement goes to the new protection of stocks and local fisheries through the 200-mile limit.

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## Australian rush

RADIO AUSTRALIA reported last month that more than 40 applications had been received from foreign fishing companies and countries to operate within the 200-mile economic zone.

Legislation has been before the Australian Parliament and

the zone is expected to be proclaimed soon.

Applications have come from fishery interests in ten different countries. Several countries (including the USSR, West Germany and Japan) also have begun talks with Australian officials aimed at developing joint ventures.

## Survey spreads

THE FLEET of Norway's Institute of Marine Research is presently dispersed over the oceans, from the Arctic to the Indian, on fishery resource surveys.

After working off the coast of Mozambique and around the Seychelles, the Dr. Fridtjof Nansen has just completed an investigation of waters around Sri Lanka, Norwegian and Sri Lanka fishery scientists took part in the expedition.

In conjunction with Soviet vessels, the G. O. Sars and

Johan Hjort have been assessing the spawning stocks of major food species between Novaya Zemlya and Bear Island. They are now engaged in an assessment of capelin stocks in the Barents Sea.

### Soon retired

The oldest Norwegian research vessel, the Peder Ronnestad, which will soon be retired, has been carrying out surveys in the fjords of West Norway.

# THE YARD THAT RAN OUT OF TIME

## Cubans' giant order held up

JUST five years ago, during the Vigo fisheries exhibition, Spanish and Cuban VIP's watched the formal cutting of the first plate of a shipbuilding order worth more than US\$200 million.

The shipyard was Astilleros Construcciones, and the order was for 26 big freezer stern trawlers, six of which would be built by another of Vigo's big yards, Astilleros Hijos de J Barreras.

At a time when pessimists foresaw a reduction in home market construction, this contract was very welcome, especially as the Cuban vessels were to be serviced and repaired in the Ria de Vigo.

Yet today the situation is not a happy one, with four vessels not yet completed at the Ascon yard. As reported in FNI last month, the yard has for six months been idle as a result of industrial troubles which, according to some, need never have arisen. And these vessels were already behind schedule with one, the Rio Jatibonico, originally scheduled for delivery in October 1976, and the remainder all due in 1977.

By August 1978, the Cubans were entitled to some nine million pesetas under the penalty time clause of the contract. During August, however, there arrived in Vigo a group of top executives from Marpesca, the Cuban management

group which succeeded Cubapesca, and this was seen as an attempt to get things moving again.

The new owners of the Ascon yards — they took over some two years ago — were not impressed. They had asked for new prices to be negotiated for the four remaining ships to take into account general cost increases, but to this the Cubans could not agree, arguing that the yard's failure to deliver on time had cost them enormous sums in lost earnings.

There were hints that the new owners were not keen to re-open the yard and continued to build at a loss.

Meanwhile, as the dispute reached ministerial level, the Cubans were visiting yards to discuss the order for the new shrimp boats, with Santo Domingo as hot favourite.

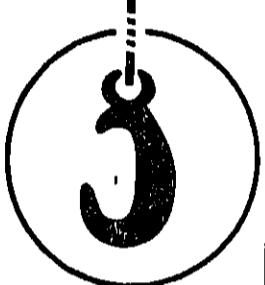
The placing of such an order with Vigo yards would be seen as an act of good faith on the part of the Cubans who have emphasised that their quarrel is with Ascon's delivery dates. In other respects, they say they are quite happy with Vigo shipbuilders.

# RAN OUT OF TIME



At the keel-laying ceremony in 1973, Cuban fishery leaders are shown round Ascon's Rios yard.

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## MINNOWS WANT THEIR SHARE...

DISCUSSIONS have been taking place between the Ministry of Industry and Energy and the smaller shipyards in Spain to try to work out how they will survive in the present crisis in the industry.

These yards claim that all the government action taken to assist shipbuilding will help only the three largest shipyard

groups. But the smaller yards employ about 13,000 people and account for about a quarter of vessel tonnage and they say their problems merit attention. As noted in FNI in September, the yards are also the builders of fishing vessels in Spain.

It is hoped that orders from Cuba may help some of the smaller yards.

## Arrested!

### FIRST VICTIMS IN U.S. CANADA BORDER DISPUTE

CANADIAN and United States fishery officials have made their first arrests in the complicated and slow-moving boundary dispute between the two countries.

Steve Robins, a lobster fisherman from Stonington in Maine, pleaded guilty in a Yarmouth, Nova Scotia, court, for fishing in Canadian waters. He was fined \$1,000, His 20 traps worth \$2,000 and a catch of 873 lb of lobsters valued at \$1,700 was confiscated.

In Seattle, Joseph Negrero of Vancouver was found guilty of fishing inside the US zone and fined \$1,000. His small boat was returned to him. He could have been fined up to \$50,000.

The arrests seemed to drive home the apparent failure of continued negotiations to solve the boundaries dispute. This flared up in June when both countries ordered each other's fishermen to go home.

Both sides alleged that the other was not living up to terms of the reciprocal fishing agreement. Since then, special

negotiations Lloyd Culler of the USA and Marcel Cadieux of Canada have been coming slowly to the conclusion that third-party arbitration may be the only way to settle four disputed boundaries and set the basis for resumed fishing talks between the two tanks.

However, there seems to be small chance of a resumption of reciprocal fishing this year. And pressure on governments to work on a 1979 agreement appears to have diminished as fishermen become used to working closer to home.

Both sides alleged that the other was not living up to terms of the reciprocal fishing agreement. Since then, special

## Arctic shock

THE LATEST assessment of spawning stocks of Arctic cod indicates that these may be only half what was expected.

Data for the assessment was collected during the 1978 polar fishery. Causes of the drop are thought to be mainly overfishing, especially the heavy catches of immature fish using illegal gear.

Reported catches may have been less than the actual take, and the earlier estimates may have been too optimistic. Scientists expected a million-ton spawning class; but the assessment indicates about 500,000 tons.

It is imperative, says research director Arvid Hyren of the Institute of Marine Research in Bergen, to reach agreement on increasing minimum mesh size to 135 mm from the present 120 mm. The institute is investigating the amount of immature fish taken with illegal gear.

## Shrimpers are guzzlers

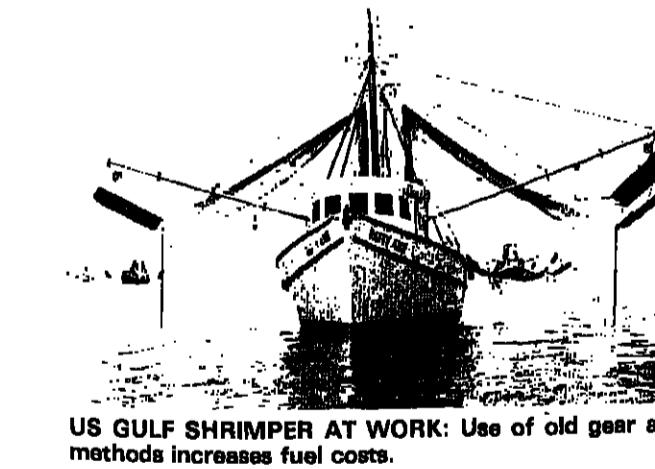
US GULF COAST shrimp trawlers can be big earners, but much of what they bring in has to be paid out in fuel.

According to some fishery experts, this single statistic tells the story of the Gulf shrimp industry problems lately. These vessels tow an otter trawl. They are using some of the oldest gear in this category.

Leading US fisheries such as those for salmon, crab, tuna and ground fish were included in the analysis. Relative to gross revenue, fuel costs in most of them range between

five and ten per cent. For the Gulf of Mexico shrimp fleet this figure is 16.7 to 17.7 per cent.

Most catchers use a balloon or flat net and are not familiar with V- or bracket doors. In addition, the decline in the resource requires longer towng hours and longer trips.



US GULF SHRIMPER AT WORK: Use of old gear and methods increases fuel costs.

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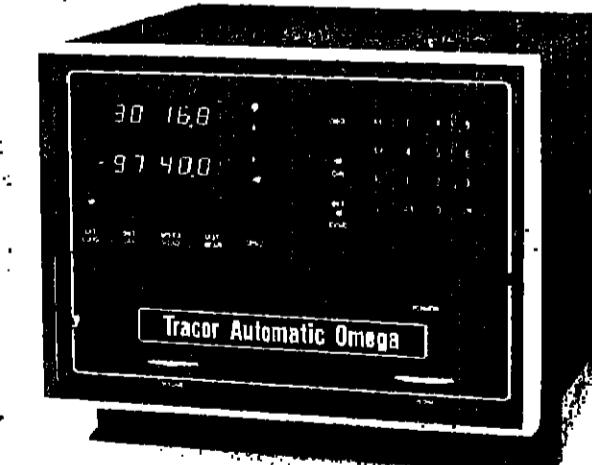
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## Norway's crab cannery pool sales

NORWAY'S 12 cannerys of crabs have pooled domestic and foreign marketing in A/S Norcanners, a subsidiary of the Cannery Export Council of Stavanger.

The new sales company is part of a comprehensive reorganisation aimed at improving crab supplies and production.

But recent efforts in Norway to persuade people to eat squid may have resulted in more squid going for use as bait!

The bait supply company, Fiskernes Agforsyning, reports a record 1,200 tons of squid sold during the year ended June 30. Part of this may, however, be due to big deliveries to East European vessels.

Squid has not had any great success as a food in Norway.

## Top Alaskan shrimper relies on WESMAR sonar



Dale Samuelson, owner and Captain of MAR PACIFICO, brought in 8 per cent of the 1977 Alaskan shrimp production while competing with 80 other fishing vessels using a WESMAR scanning sonar.



MAR PACIFICO, Samuelson's 66-foot (20m) Bender double-rig and No. 1 trawler in the 1977 Alaskan shrimp production is equipped with a WESMAR scanning sonar. Samuelson is equipping his new vessel with another WESMAR sonar.

"IT'S SUCH an advantage that I don't want anyone else to have it. It's what gives me the edge," Dale Samuelson, owner and Captain of the No. 1 Alaskan trawler MAR

Pacifico, said of his WESMAR scanning sonar.

Using his sonar, Captain Samuelson brought in eight per cent of last year's (1977) Alaskan shrimp production while competing with 60 other fishing vessels. "I'd say my production every month pays for the sonar again," he said.

The owner of the 86 ft. (26m) Bender-built double-rig

shrimps off the Kodiak-Sand Point-Dutch Harbour area of the Aleutian Islands near Alaska. "I use my WESMAR sonar strictly for bottom work. For

my application, 90 per cent of the sonar's value is in determining bottom contour," he said.

He added that his WESMAR sonar shows him bottom differences. "I like to tune the sonar so mud shows as black on the CRT screen, sand shows as speckles and hard bottom is shown progressively brighter." The sonar also shows drop-offs and helps me lay the gear."

The sonar gives Captain Samuelson advanced information about the seabed ahead of the *Mir Pacifico*, allowing him to manoeuvre his vessel through channels, around reefs and rock outcroppings.

"With a depth sounder," he said, "it tells you when you're over it." The veteran shrimper said that, by using WESMAR sonar with its advanced information, he is able to manoeuvre his vessel around obstacles during dragging without hanging up.

Because he knows the exact location of underwater obstructions, he can drag the *Mir Pacifico*'s nets closer to obstacles where fish congregate, helping to increase his catch.

"The WESMAR sonar is easy to operate," Captain Samuelson said. "I hardly ever touch any of the controls except for the tilt and sometimes the range. I practically never use an angle less than 40 degrees, usually between 40 and 70 degrees in 90 to 125 fathoms," he explained.

"You get lazy with the sonar. Other vessels are busy taking bearings, with the sonar, you don't have to because you know exactly where you are. There are some places where the sonar is the only way to get through, too."

Captain Samuelson recently decided to purchase another WESMAR scanning sonar, to be installed aboard his new, 127ft. (38m) vessel under construction.

"The only people who complain about sonar are those who either don't have it, or don't know how to use it."

Captain Samuelson feels marginal fishermen will eventually be driven out of the business by those using sonar. "The WESMAR sonar will make fishermen more money. It gives you the edge."

## WESMAR sonar a valuable aid to salmon seining

"THE WESMAR sonar is an absolute essential for salmon. You never have to make a blind set using it; it tells you when there aren't any fish, when there are just a few fish, and when there's fish to make a set on," Johnny Watson, captain of the *Western Producer* and senior skipper of B. C. Packers of Vancouver, British Columbia, Canada, said. "And, the WESMAR sonar helps you set so you can catch the most fish. I just wouldn't make a set now if the sonar didn't show me fish."

"When we're fishing, other guys around us who aren't using WESMAR sonars are making blind sets, and in many places, you only have one chance to set." That's how the WESMAR sonar made us money. It tells us when to make a set, or when not to because there aren't any fish, so we can move to another area."

Until recently, however, Captain Watson used his WESMAR sonar only to locate herring, not believing the sonar could detect salmon.

"The sonar showed only a small school of fish," he said. "The other boat set, and

thought the only way to find salmon was watching for finners and jumpers. When I was told the WESMAR sonar could find salmon, I just didn't believe it."

After talking with a WESMAR representative who urged him to use his WESMAR sonar to locate salmon, Captain Watson decided to try the sonar on a fishing trip. He turned on the sonar, and scanned the area for salmon. Suddenly, the sonar's CRT screen showed marks. Captain Watson headed the *Western Producer* toward the direction the sonar showed targets, and he spotted a finner.

"There were no visual signs of salmon," he said, "but sure as heck, the WESMAR sonar showed salmon, and there they were."

Captain Watson continued to test his WESMAR sonar on salmon, which repeatedly confirmed its ability to detect the fish. One area he brought the *Western Producer* into was already being fished by another vessel.

"The sonar showed only a small school of fish," he said. "The other boat set, and



Captain Yachiro Kuwahara caught US \$20,000 in Spanish mackerel during one set recently using his WESMAR sonar.

Below: Captain Johnny Watson and the *Western Producer*.

## Japanese purse seiner increases catch with WESMAR sonar

USING WESMAR scanning sonar, Yachiro Kuwahara, owner and captain of the 20-ton purse seiner *Compira Maru*, caught US \$20,000 worth of Spanish mackerel during one set recently. This helped to increase his total catch of Spanish mackerel for the month to nearly \$100,000.

Captain Kuwahara uses his WESMAR sonar with a 60-degree tilt to locate rock piles and shipwrecks in the fishing grounds near Tsurumi, Oita Prefecture, his home port where he fishes for Spanish mackerel.

"It's hard to imagine fishing without the WESMAR sonar now," Captain Kuwahara said later when talking with WESMAR representative for Japan, Phil Werdal. "I wouldn't leave port without it."

Years ago, adding fertilisers to boost salmon runs would have been thought unnecessary. A commercial fishery had not

been fully developed and sockeye runs were fully counted in millions of fish. When the adults had spawned, they died, decayed and provided nutrients for the plankton. Now, with fewer fish, artificial fertilisation has become necessary.

The project began when researchers became excited by reports that sewage dumped into Lake Washington, near Seattle, was increasing the size of salmon smolts in the lake. They decided to start tests in Great Central Lake.

Fertiliser put into the lake increases the amount of plankton on which young sockeye feed. And the larger the size of the sockeye smolts when they leave the lake, the better their chance of survival in the Pacific Ocean.

## NEW WAY TO OPEN TRAWL MOUTH

A SIMPLE way to double the opening of the mouth of a trawl has been dreamed up by Menachem Ben-Yami, senior fishery industry officer of FAO's Department of Fisheries.

Like so many remarkable inventions, this one is obvious once it has been demonstrated, reports *FNI* correspondent Cedric Day. It consists of fixing a strip of canvas so that it falls inside the mouth of the net. This results in it being pressed up against the netting of the square as the net is towed, thus lifting the net mouth.

"It is an idea I have considered for some time," Mr. Ben-Yami told me when I saw him recently in Rome. "I was able to test it when I went to Hull a few weeks ago and rigged up a model for demonstration in the flume tank of the White Fish Authority's Industrial Development Unit there.

"I have been experimenting with trawls all my life," Mr. Ben-Yami said, "but this is the first time I have been able to watch one in action. We could see exactly how my idea worked."

### 'Sail kite'

He used a model of a medium opening trawl net with V-shaped wings and attached the canvas "sail kite," as he calls his invention, to the length of the boom, the width of the canvas being half its length. He left all ten floats on the headline in the first tests. The results, converted to those for an actual full-size trawl, were:

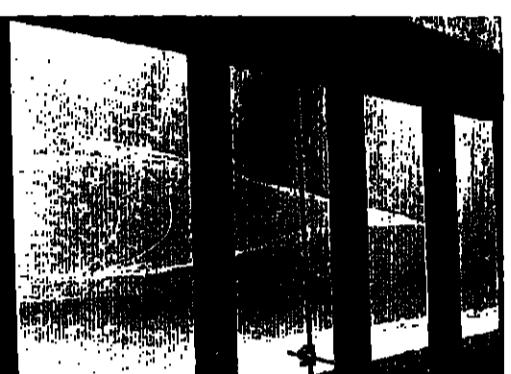
Fishing height at the centre of the mouth of the net, same trawling rate, with all floats only with floats, trawling at 2½ knots, 3.9 ft.

Fishing height at the centre of the mouth of the net, same trawling rate, with all floats attached and the "sail kite" on, 8.5 ft.

Further tests with the "sail kite" on the net and only one float-attached resulted in an opening of 4.5 ft at the centre of the mouth of the net.

### Leader rope

To ensure that the sail kite flops into position inside the net mouth when the trawl is shot, Mr. Ben-Yami suggests that the back edge of the kite



The White Fish Authority flume tank at Hull, showing an inshore pair trawl under test. Now designers can see what their nets will do under tow.

astonished to observe how effective the sail-kite was, and so were the skippers who were undergoing a training course at the establishment and were present during the tests.

Pressure of the inflowing current of water will then push it into position against the netting of the square. He added that care must be taken not to make the sail kite bigger in width than one-third of its length because it would then tend to lift the net too high.

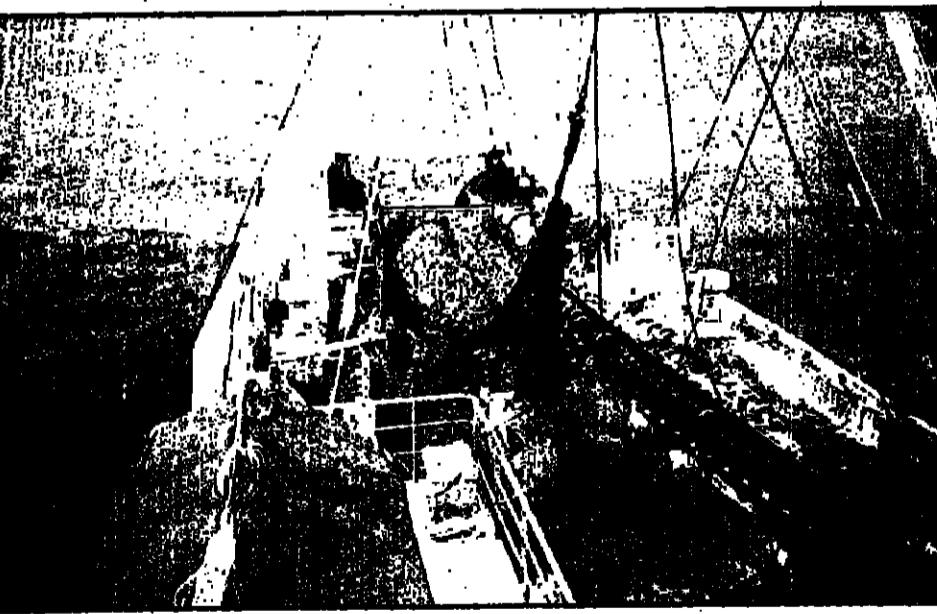
"I would like to see skippers in various kinds of fisheries try out the sail kite so that we can have practical proof of its effectiveness and find out the extent to which it can increase catches," Mr. Ben-Yami said.



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## from the dockside

FIRST THE fleet: now the factories. In Peru, the operative word in the fishery industry these days is "deprivatisation." There has to be a better word to describe what is happening, but I can't think of it!

What it means is that, piece by piece, the government is trying to sell the industry back to the people who had it taken from them not much more than five years ago.

It was not one of the most brilliant feats of nationalisation. The anchovy section, the mainstay of Peruvian fishing, had already slumped. There were too many boats in the fleet and too many factories to handle their depleted harvest.

From the noises the government made, it was going to solve all that. But, despite cutbacks and controls, the anchovy stock has yet to recover, and the industry is even more depressed than it was in May 1973.

Although, the meal factories continue in government hands, the fishing fleet has already been sold back — to numerous private owners who have since pleaded for the

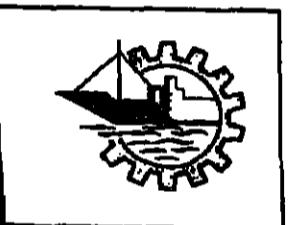


• Norway's Law of the Sea Minister Jens Evensen after one of his meetings on fishery limits. See Evensen signs off.

factories so that cutter and processor can be linked in integrated companies.

First, however, they are being offered the food fish plants. EPSEPE, the state project set up to handle most of the food fish industry, is being dismantled and its hardware sold.

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### Salad suggestion

United States officials say they still lack the final convincing proof that the case of botulism in England in July (see *FNI* August and September) was caused by salmon canned in Alaska.

Speaking for the Food and Drug Administration in Washington, Nancy Clegg said the four victims ate a salmon salad. Other ingredients might have been responsible for the poisoning.

As we reported in *FNI*, British food scientists have no doubts over the source of the botulism. Saline washings from the can and particles found in it were injected into mice which quickly died. Final diagnosis of the poison as that from the spores of *Clostridium botulinum* type E was confirmed weeks later through cultures.

Salmon fishermen and packers in the Pacific north-west were, of course, deeply upset by the British government warning to consumers not to eat US canned salmon until further notice.

"We are concerned and the British buyers are concerned about a move in Britain to take all US canned salmon from store shelves," said Bill Franklin of Kelly-Clarke of Seattle, selling agent for canned salmon.

It is more than a move. Within hours of the initial warning going out, canned salmon fell out of the market in the United Kingdom, and within days there were few cans to be found anywhere in Western Europe. Mr. Franklin will still have a job locating a can of US salmon on a British shop shelf.

Canners, wholesalers and retailers will now have to launch a comeback campaign that will reassure consumers that canned salmon is safe.

Peter Hjul

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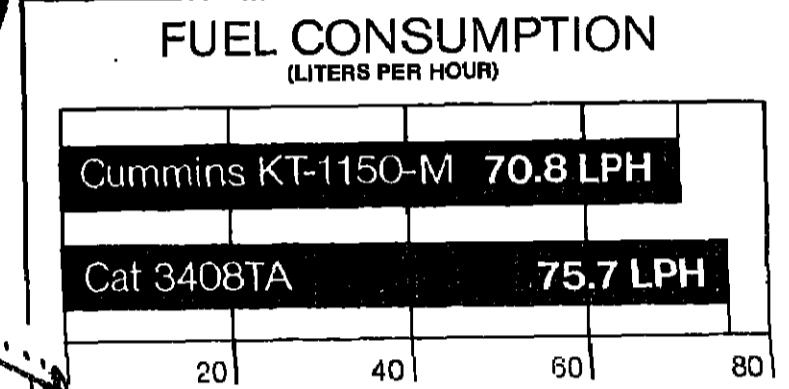
at least £206 in one thousand hours of operation.

But fuel economy is only part of the story.

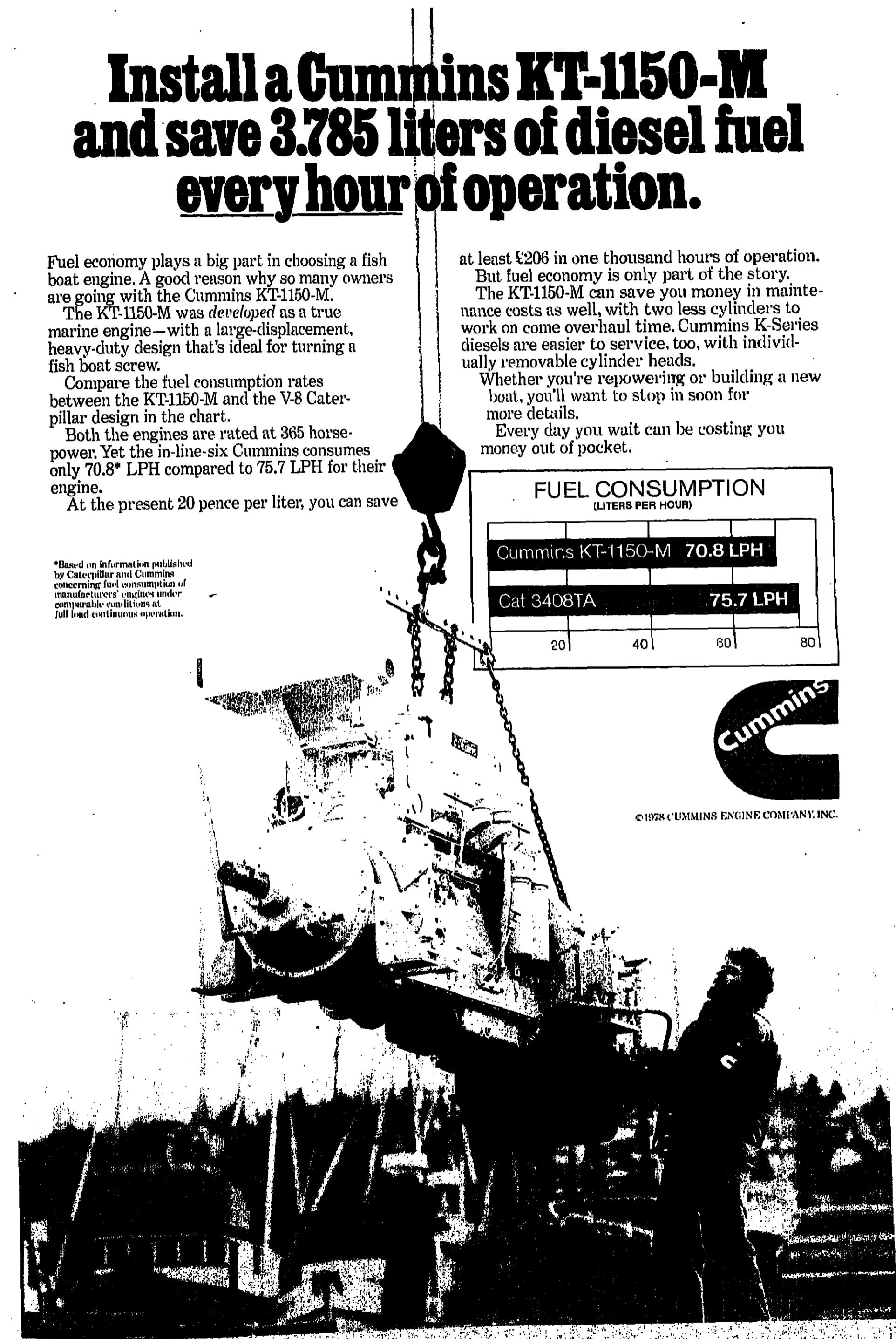
The KT-1150-M can save you money in maintenance costs as well, with two less cylinders to work on come over-haul time. Cummins K-Series diesels are easier to service, too, with individually removable cylinder heads.

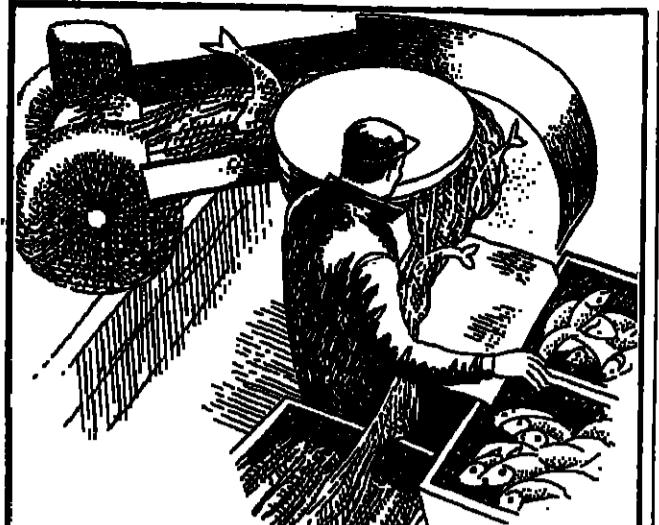
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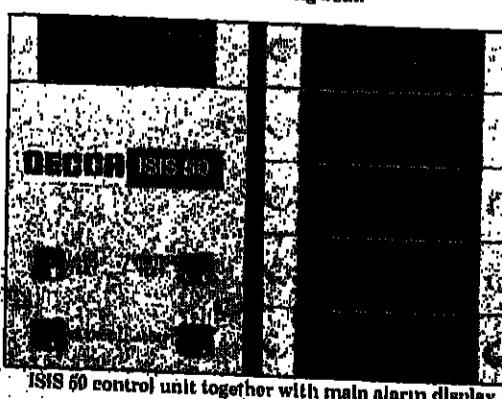
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Record US Fish Expo features in-water

# THE SUPER SHOW

RECORD support from suppliers to the industry and record attendances are expected at the 1978 American Fish Expo, which has its showing in Boston, Massachusetts, from Wednesday, October 25, to Saturday, October 28.

This year some 10,000 visitors are expected at a show that will pack the exhibits of more than 300 firms into Boston's Hynes Veterans Auditorium, and feature everything from splicing tools to completely rigged fishing boats.

Apart from the group stands, other British and Norwegian manufacturers will be displaying equipment on the stands of agents in the United States. Most interesting of the new features at

Manufacturers from many different countries will be displaying a range of fish finding and catching equipment. Displays will also include plant for processing, preserving, packaging and handling seafoods.

In addition to exhibits by United States companies, Fish Expo will present joint stands from the United Kingdom, Norway, Iceland and Canada (Nova Scotia). Individual firms from Sweden, Germany, Spain, Panama, Belgium and Canada will also be there.

Over the four days seminars will begin daily at 9 a.m. The boat display opens at 10 and the exhibition halls at 11.

Fish Expo has grown considerably in size and importance during the past few years, due in part to a dramatic change of

Fish Expo 78 is the use of a nearby marina for an in-the-water display of fishing vessels. These will include general-purpose boats, trawlers, research and demonstration vessels ranging in length from 19 to 50 ft.

Once again Fish Expo will have a full programme of seminars and workshops dealing with new catching techniques, seafood processing, navigation, fisheries management, vessels design, aquaculture and other topics.

Over the four days seminars will begin daily at 9 a.m. The boat display opens at 10 and the exhibition halls at 11.

Fish Expo has grown considerably in size and importance during the past few years, due in part to a dramatic change of

boat display

# SHOW

fortunes in the American fishing industry. The showing in Seattle in 1977, for example, was the larger of the 11 exhibitions since it was launched in Boston in 1967.

In New England particularly, the industry had been in a state of decline, a victim of benign neglect by government, investors, manufacturers and general public. But, with 20 per cent of the world's fishing resources now included in America's 200-mile offshore jurisdiction, prospects there have never appeared brighter.

Increased activity is also seen ashore, where plans abound for the development of new fishing ports and processing facilities.



THE record-breaking Fish Expo in Seattle last year: this year's show in Boston should be even larger.

## The latest for finding and catching

and locates fish through 360 degrees.

Two new features of the SS165 are modulated sweep and digital tilt readout, said to be new to a compact sonar set.

Modulated sweep presents fish and underwater obstructions in true range and relative bearing on a ten-inch (25cm) CRT screen. Digital tilt readout provides precise sonar beam repeatability.

Kone will be showing the new range of large recording fish finders from Furuno in Japan — the models FE-612, 812 and 813.

These are the first in a new series of all solid-state recorders.

They will be shown with the ES-5 scope unit featuring bottom-surface lock.

Fish Expo is always well

filled with much of the best-known equipment in North America for propulsion, for gear handling and for fish finding and vessel navigation.

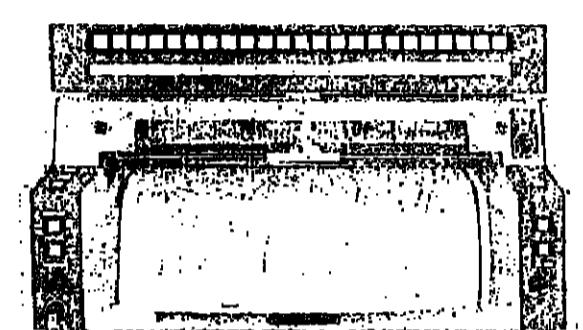
Among the variety of processing and preservation plants which are to be displayed at Fish Expo 78, will be the Carrier Transcold Company's new Dolphin refrigeration system which has been tailored for fishing boats.

There will also be a Furuno sonar model FH-105, a full line of radars and smaller fish finders, and two new facsimile recorders.

It also reveals some novel and unusual items.

This year, for example, tucked away in the British group of stands will be the GR Torrymeter. A small electronic instrument developed by the Torry Research Station in Aberdeen to help assess the quality of a fish through its freshness.

The Torrymeter is made in Scotland. It is now in use in 45 countries.



THIS Japanese Furuno FAX-143 facsimile recorder will be shown on the Kone stand.

# ARENCO SKINNER

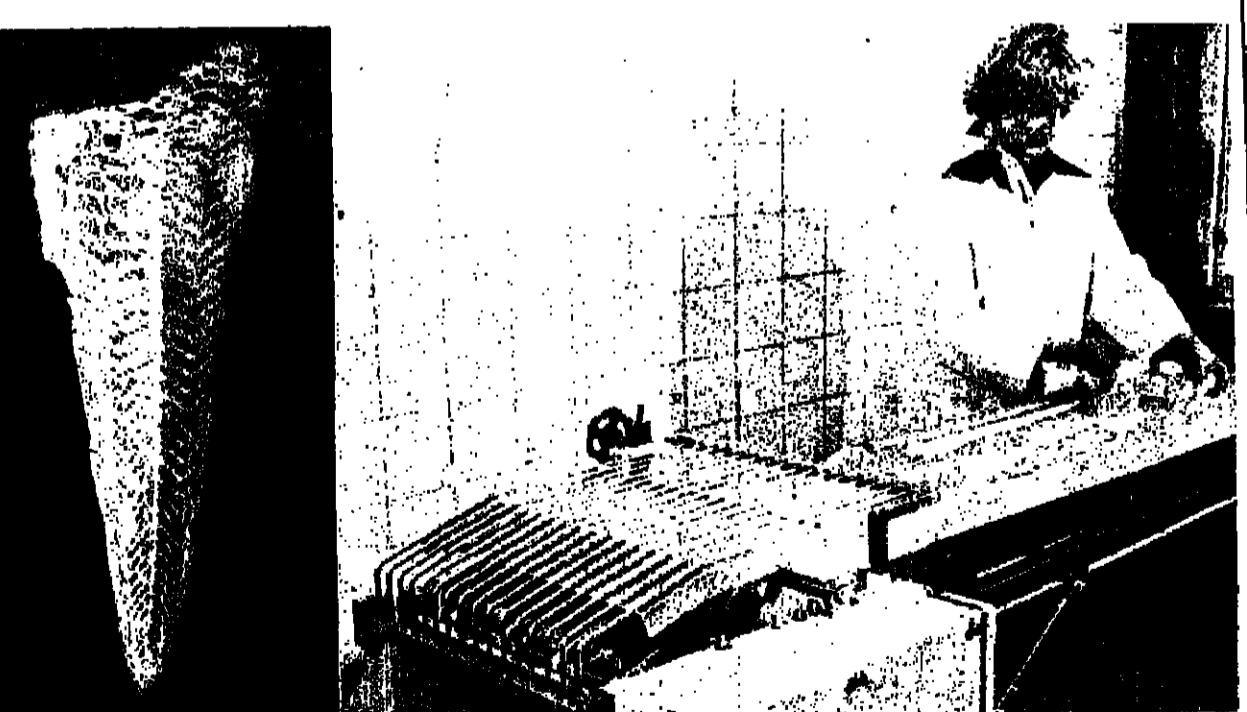
not only for such fish as cod, saithe, haddock, whiting and pollack  
- but also for herring

The ARENCO SKINNER model CUS is the outcome of experience gained both in development workshops and processing plants.

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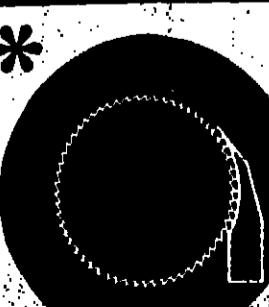
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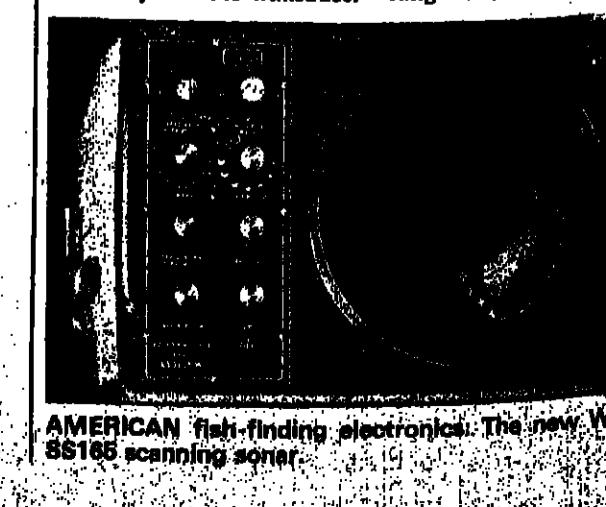
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**FISH EXPO**



## Meetings and exhibitions

### WHERE IT ALL BEGAN

COLONIAL Williamsburg, the restoration of Virginia's 18th-century capital, will be the site of the 23rd annual Atlantic Fisheries Technological Conference which will be held from November 5 to 8 at the Williamsburg Lodge.

The first AFTC took place in 1957 in Williamsburg. The purpose of the conference is to provide a forum where fisheries technologists can discuss research objectives and methods, exchange research concepts and hypotheses, and present informal reports on researches completed.

From tentative beginnings, the conference has grown to international stature, with past sessions held in most eastern states of the USA and in Canada.

Topics this year will include energy, underutilised species, economics, seafood composition, quality, and nutrition. More than 50 speakers will participate.

Over three hundred people are expected to attend this year's session. Rooms have been set aside in the Williamsburg Lodge, The Motor House.

The necessary forms for papers, reservations, and registration can be obtained from John Long, Secretary, 23rd AFTC, Department of Food Science and Technology, Virginia Polytechnic Institute and State University, Blacksburg, Virginia 24061, USA.

## Norway's fishermen back conservation

THE ANNUAL convention of the Norwegian Fishermen's Association ended in Trondheim on September 8 with a unanimous declaration in support of the conservation policy of the Fisheries Directorate.

But, while recognising that advice from marine scientists must continue to guide official fisheries policy, the governing body of the Association said that the tendency of the experts to make repeated and substantial revisions of

estimates baffled fishermen.

The convention called for tougher enforcement of regulations in the Norwegian 200-mile economic zone. It expressed indignation over violations of Norwegian and former NEAFC regulations by "the other coastal state in the Barents Sea."

It also recommended that reciprocal rights in the national zones be based on value scales.

The Association repeated its call for a 1978 allocation of 20,000 tons of Atlantic-Scandinavian herring.

Speaking at the convention, Director of Fisheries Knut Vardal warned that the basic stocks of many of Norway's

fisheries would be far less in 1980 than was estimated when the present long-term plan was drawn up.

He said shortfalls must be expected for Arctic cod, saithe, capelin, and mackerel.

Estimates of the spawning cod stock indicate this may be only half that expected for 1980. Capelin stocks have also been severely diminished.

But stocks of North Sea and Atlantic-Scandinavian herring have been building up. If the strict protection measures were kept up, there was reason to hope for gradual increases in these stocks during the 1980s.

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\* Teteron is TEIJIN's registered trademark for its polyester fiber & fabrics.

### NOR-FISHING IS SET FOR OSLO

MORE THAN 140 companies and organisations concerned with the fishery industries have now booked space in Oslo's Sjølyst Centre for the Nor-Fishing '78 exhibition from November 20 to 26.

Two seminars will be held in the Centre during the time of the exhibition. The first, being organised in co-operation with FAO, will look at the work to be done in developing countries.

The other will review the Norwegian experience in finding and catching blue whiting. This year, the Norwegians caught about 115,000 of this fish. The seminar will be in Norwegian with interpretation into English.

A three-day visit to Nor-Fishing from Britain is being organised by the Importer's Club (Norway). The inclusive cost for scheduled flights, first-class hotel, bed and breakfast is £166, with single-room supplement.

Participants in this tour depart from London on November 19 and return on November 22.

Further information can be obtained from Importer's Club (Norway), 20 Pall Mall, London SW1.

### New Orleans fish meal conference

NEW ORLEANS will be the venue for the 1978 annual conference of the International Association of Fish Meal Manufacturers, from October 30 to November 3.

This will be the 18th meeting of the Association (it was formed in Madrid in 1959) and it is gathering in New Orleans at the invitation of United States members, Zapata Haynie Corporation and Seacoast Products Inc.

A special feature of the conference will be presentations by US and other

experts on the world protein and animal feeding stuffs markets, and on fish-spotting techniques.

At the 1977 conference, a new feature was a symposium on meal processing designed for association members and their technical advisers and invited equipment manufacturers. This proved highly successful and a further symposium will be held on October 30 to consider effluent control and process automation.

The Association now has members in 16 countries.

### US London show

UNITED STATES-based fish companies, looking for export outlets in the British market, will feature strongly in a two-day exhibition of American foods in London on October 9 and 10.

Organised by the US Department of Agriculture, the Food America '78 exhibition will be in the Grosvenor House Hotel.

Among the fish companies taking part are: Fairco Inc.

(Canned Shrimp), Superior Fish Company (cooked Florida lobster, lobster tails, Spanish mackerel, fillets, dressed conch, red snapper fillets and frog legs), Food America Exports (frozen oyster products, canned minced clams), Kennebec Fish Corporation (frozen herring fillets, frozen hake, dogfish, skate wings, monkfish tails), and D. K. Paul and Company (frozen fish and smoked fish).

## STATE SELLS PERU'S FOOD FISH PLANTS



Freshly-caught food fish are cleaned and sorted at port in Northern Peru

THE PERUVIAN government is dismantling EPSEP, its food fish division, and is offering its plant to private industry. It is a "magnificent opportunity" for the private sector, said Fisheries Minister Francisco Mariategui.

According to the Minister, recent surveys in Peruvian waters had indicated stock of 16 million tons of pelagic fish.

from an  
FNI correspondent

meal," said one industrialist. "Nowadays you can earn as much or more by selling five tons of fish."

"The whole industry should be restricted," said another. "It becomes a question of whether you should burn food fish for meal when people need it to eat."

Quality was one of the targets in the state programme to develop the industry which included construction of fishing complexes at Paita and Samanco on the northern coast and at La Puntilla, south of Lima. All of these are now up for sale mainly because the state can no longer afford to operate them.

A group of private investors successfully tendered the equivalent of £1.4 million to acquire the Chalpesc factory which forms part of the Paita complex. They are paying 25 per cent down and the rest over five years.

Formerly owned by Epsep (34 p.c.) and three Japanese companies, Chalpesc went into liquidation in July 1977.

**Pilchards**  
The new company will be known as Del Mar S.A. It will process pilchards, jack and horse mackerel, dogfish, shark and saury.

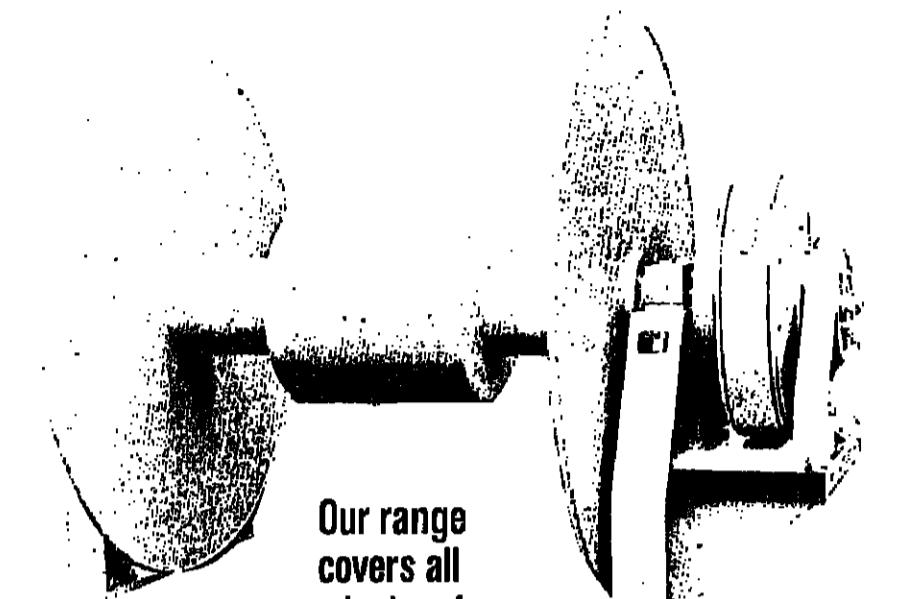
At Samanco near Chimbote, three private companies have been assigned 10,000 square metres of land each for factories. This amounts to half the total area of the complex, whose port works and buildings have already been completed.

Officials describe the La Puntilla complex near Pisco as a "white elephant," apparently because of insufficient fish in the area.

Epsep has been authorised to sell off boats (of which it has 22) and all its processing plants and cold stores. It is also to sub-let terminals and other units it manages for the Ministry of Fisheries. Staff has been cut from 3,500 in 1975 to 1,480 this year. Further redundancies are expected.

Since the cutback, Epsep says it had a profit of 1.8 million soles in 1977, compared with loss of 309 m. in 1976.

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A small trawler discharged a day's catch at Paita. Pictures by FAO.

### Seaweed scooper

TRIALS have been carried out in the White Sea near the Solovetski Islands of a vessel which the Russians claim is the first to mechanise the labour-intensive process of harvesting blade kelp.

Designed and built by engineers in Murmansk and Archangel, the vessel is reported to have a collector-conveyor device which is lowered over the side. A cutter operates at a depth of four to 12 metres and the kelp is brought to the surface by belt conveyor.

The vessel has a crew of three. In one hour it is said to be able to harvest a day's supply for a seaweed processing factory being built near Archangel.

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MODERNISATION of the fishing fleets of a developing country can mean many things. It can be the powering of a traditional canoe by an outboard motor; the replacement of a sail by a simple inboard diesel engine. It can also mean giving a boat the protection of the latest in modern coatings, as this article explains.

## HOW ICI IN SINGAPORE

# Paints and

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FISHING in south-east Asia is a varied and important activity providing the essentials of a staple diet for millions of people.

Numerous government agencies have been set up to co-ordinate the industry. In Malaysia, for example, the Maju Ikan acts as a co-operative to assist fishermen in the construction of boats as well as in the marketing of their catches.

The fish are normally caught close to the shore on the coasts of the Sunda shelf in boats ranging from 14-28 feet long. The design of the vessel has not changed significantly over the last few hundred years, but the change from sail to engine power which is taking place has updated the vessels considerably. Although it is a traditional industry and slow to change, more modern methods of catching are being introduced with the customary worry that the sea will be over-fished.

### Hacked

During construction, the vessels are hacked into shape using axes from trunks of local hardwoods such as chengai and meranti and planked up onto their frames without the use of templates or drawings. There are still some boats in use which were built with wood dowels instead of metal fasteners. However these are dying out.

After the planking is completed, the seams are caulked with thin cellulose fibres which are the bark of a local tree. In Thailand, old fishing nets or cotton fibre are wedged in between the planks. After the insertion of these fillers the caulking compound comprising tung oil, clays and occasionally lead oxide are mixed together and applied to the seams.

Various types of compositions were applied over the wooden hull; traditional materials were bitumen or a mixture of bitumen and tung oil. Even though the vessels were at sea for relatively short periods of two to three days at a time, they were still fouled on returning to port.

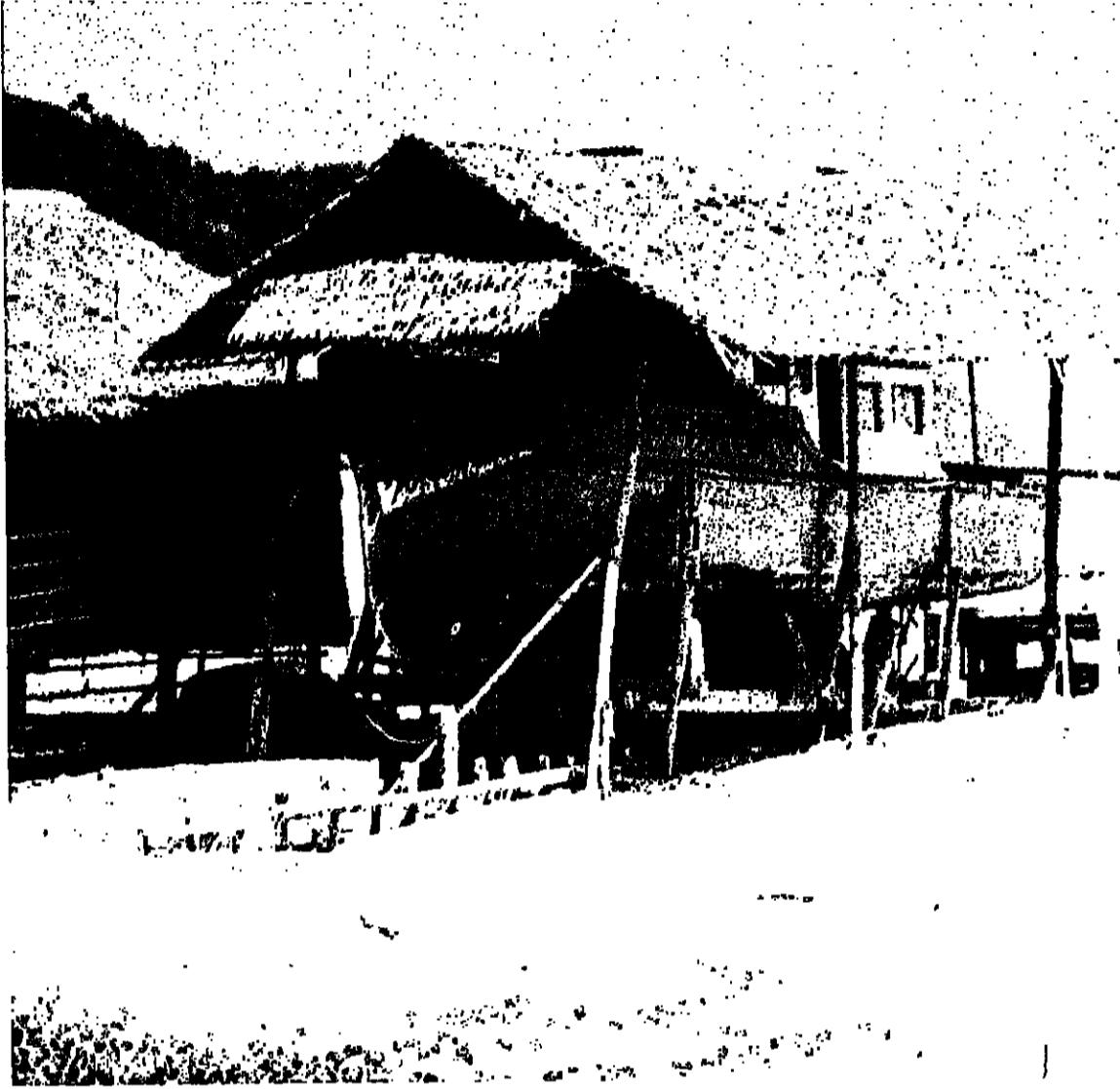
### Replaced

Today, very little bitumen is used underwater. Marine paints and anti-fouling compositions have replaced the traditional coatings. In Thailand, where there was a certain amount of American influence, the vessels tend to use more expensive vinyl and antifouling. In Malaysia and Indonesia conventional products are used.

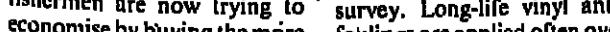
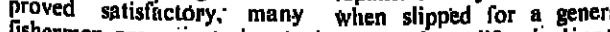
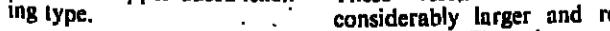
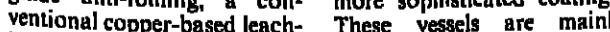
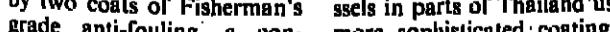
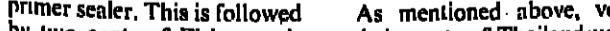
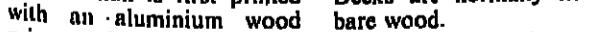
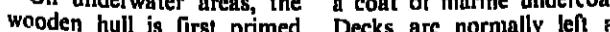
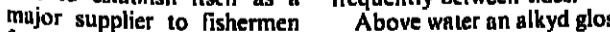
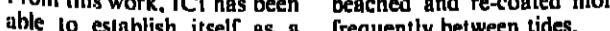
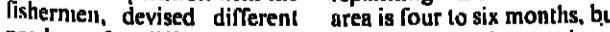
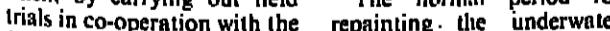
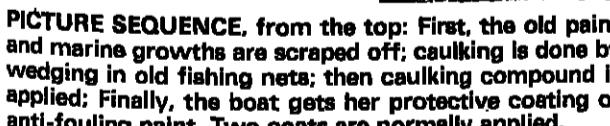
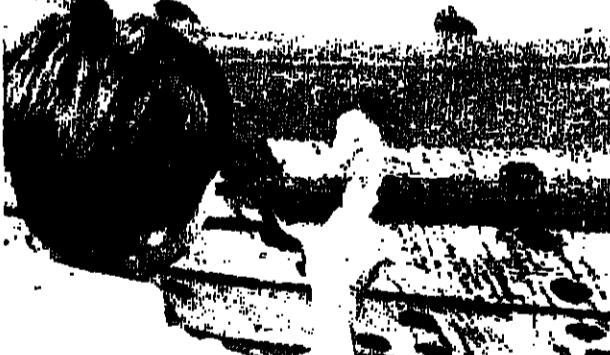
To meet the fisherman's demands, ICI Paint companies in south-east Asia studied the different requirements at the ICI regional marine products are used.

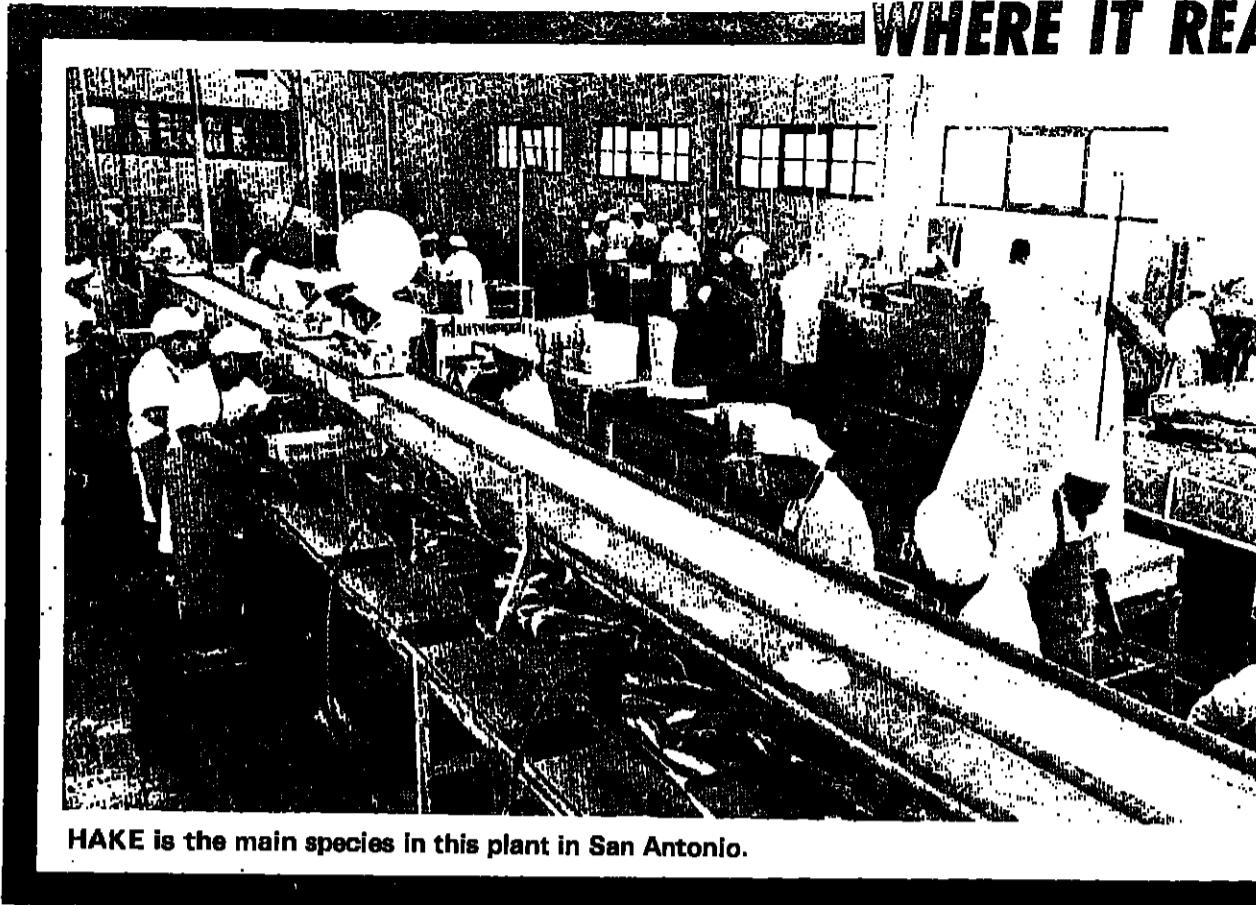
## GAVE THE FISHERMEN WHAT THEY WANTED

# progress in Asia



A WOODEN BOAT is slipped on a beach in Thailand for cleaning, caulking and painting.





HAKE is the main species in this plant in San Antonio.

WHERE IT READS LIKE A WHO'S WHO

# Chile future

MANY Chileans (and foreigners) have long believed that the future of the country should be sought along its generous coastline. They have said again and again that, adequately surveyed and fully exploited, ocean resources could produce earnings exceeding those from copper, Chile's major export. That possibility may now be on the horizon, reports *FNI* correspondent KENNETH PROUDFOOT.

TODAY in Chile, fishing is an activity offering bright prospects. The list of foreign companies setting up offices and processing plants is beginning to read like a Who's Who of international seafood processors.

Together with new investments by local companies (already in fisheries or from outside), these are moving Chile through a period of considerable fishing industry growth.

One big area of expansion is in canning. Technicians at the Institute of Fisheries Promotion (IFOP) say canned seafood could be greatly improved if the raw material was better handled and processing plants were technically improved and modernised.

In 1977 export sales of

canned seafood amounted to 4,825 tons and the value rose from US\$2.8 million in 1976 to \$9.5 million. Present canning capacity in Chile is about three million cases a year.

But rising demand for all seafood products and steady orders continue to encourage the growth of installed capacity along the coast. Meanwhile, IFOP, together with other state agencies and several universities, is organising programmes to instruct crews and factory workers how to improve the quality of fish by more careful handling.

For canned seafood production, Chile can be divided into four regions:

**NORTH** . . . this has eight factories situated in the port cities of Arica, Iquique, Antofagasta and Coquimbo. They pack jurel (jack mackerel) and Spanish sardines (*Sardinops sagax*).

In Antofagasta and in

Iquique, some canneries process cholas (mussels) and also have artificial cultivation trials in the area of Mejillones which offer the prospect of a steady supply of quality-controlled raw material. In Iquique, plants also handle bonito when this is available.

The northern zone has tended to concentrate on fish meal processing and so the canning section has been economically less important. But, by utilising both mackerel and Spanish sardine, canners offer an interesting variety of lines.

Nationally, 75 per cent of all canned fish in Chile is salmon-style jurel. This fish and product is popular with domestic consumers and relatively inexpensive (a 450-gram pack sells for the equivalent of 50 US cents).

**CENTRAL** . . . this includes the canneries in San Antonio and Valparaiso. The main fish processing in the region is the freezing of hake and langostinos. In addition, small amounts of shrimp, langostinos and locos (Chilean abalone) are canned, mostly for export.

**SOUTH** . . . this zone has about 11 canneries centred in the Talcahuano area where the principal line is canned seafood, although there are also several meat plants. The companies can jurel and also another species of sardine known scientifically as *Clupea bentincki*.

The above three zones depend primarily on industrial fleets for their raw material. The fourth zone, in the far south, gets most of its fish from small-scale fishermen working tiny boats and dependent on weather conditions.

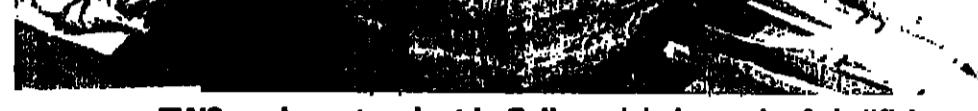
In this zone are Puerto Montt, Calbuco, Chile, Puerto Aisen and Punta Arenas. There are some 20 companies processing seafoods. While the zones to the

OF INTERNATIONAL SEA-FOOD PROCESSORS

# sees big in fisheries



ALL PICTURES BY FAO

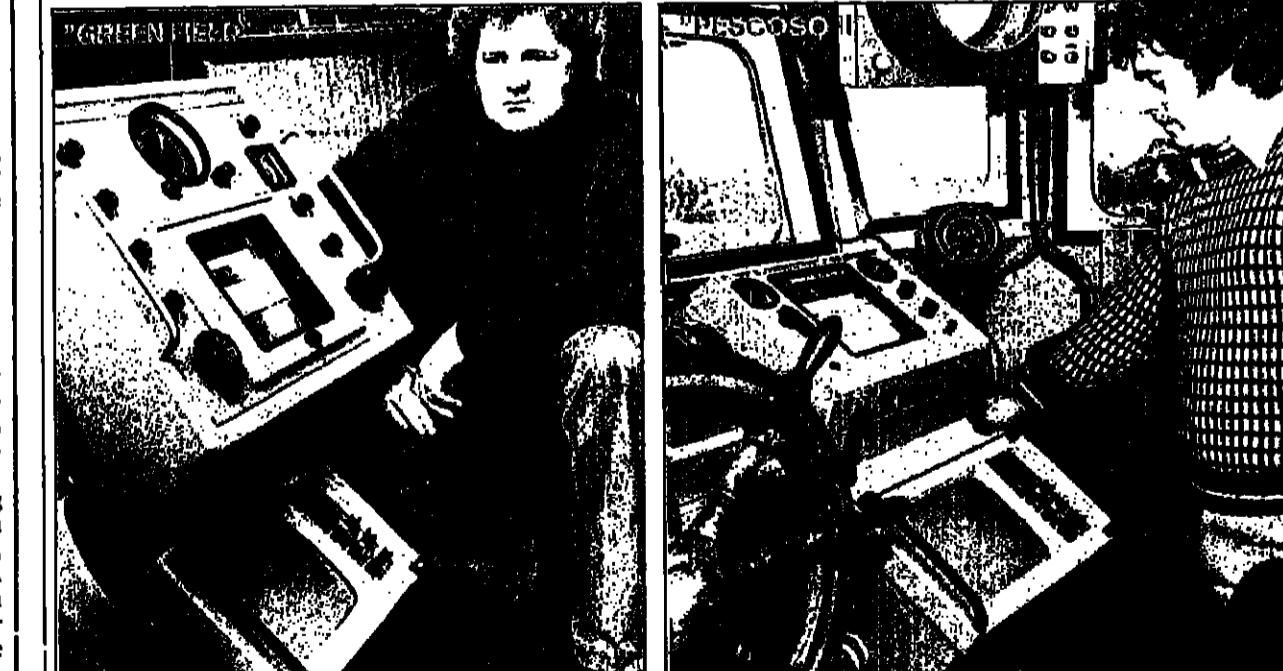


TWO workers at a plant in Calbuco label a pack of shellfish.

Arlene Fournier



Simrad SQ4 and SL sonars together with the new CQ Sonar Scope offer: ■ Long range detection ■ Excellent definition of MACKEREL, HERRING, PILCHARDS and SPRATS.



It has been said that mackerel could only be seen on high frequency sonars. This has been proved wrong, particularly by Mr. Tom Stevenson of 'Green Field' and Mr. Alan Nicholson of 'Peccoso II'. The skippers of 'Green Field' and 'Peccoso' were also among the first to detect mackerel on their SQ sonars at 1200 to 1750 m. and other fish at the full 2500 m.

Mr. Stevenson (SQ sonar) is very impressed with the large CQ scope. Its memory store gives a steadier picture, making it easier to determine the size, shape and direction of the shoal. "I'm very pleased with this" he said. "I'm getting mackerel at 1500 m. by day and 500 by night." He was also delighted with the new CQ scope, particularly the definition, master/slave facility which saves paper, and the offset arrangement.

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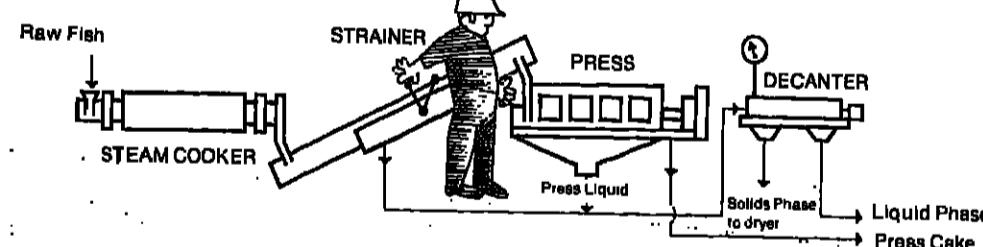
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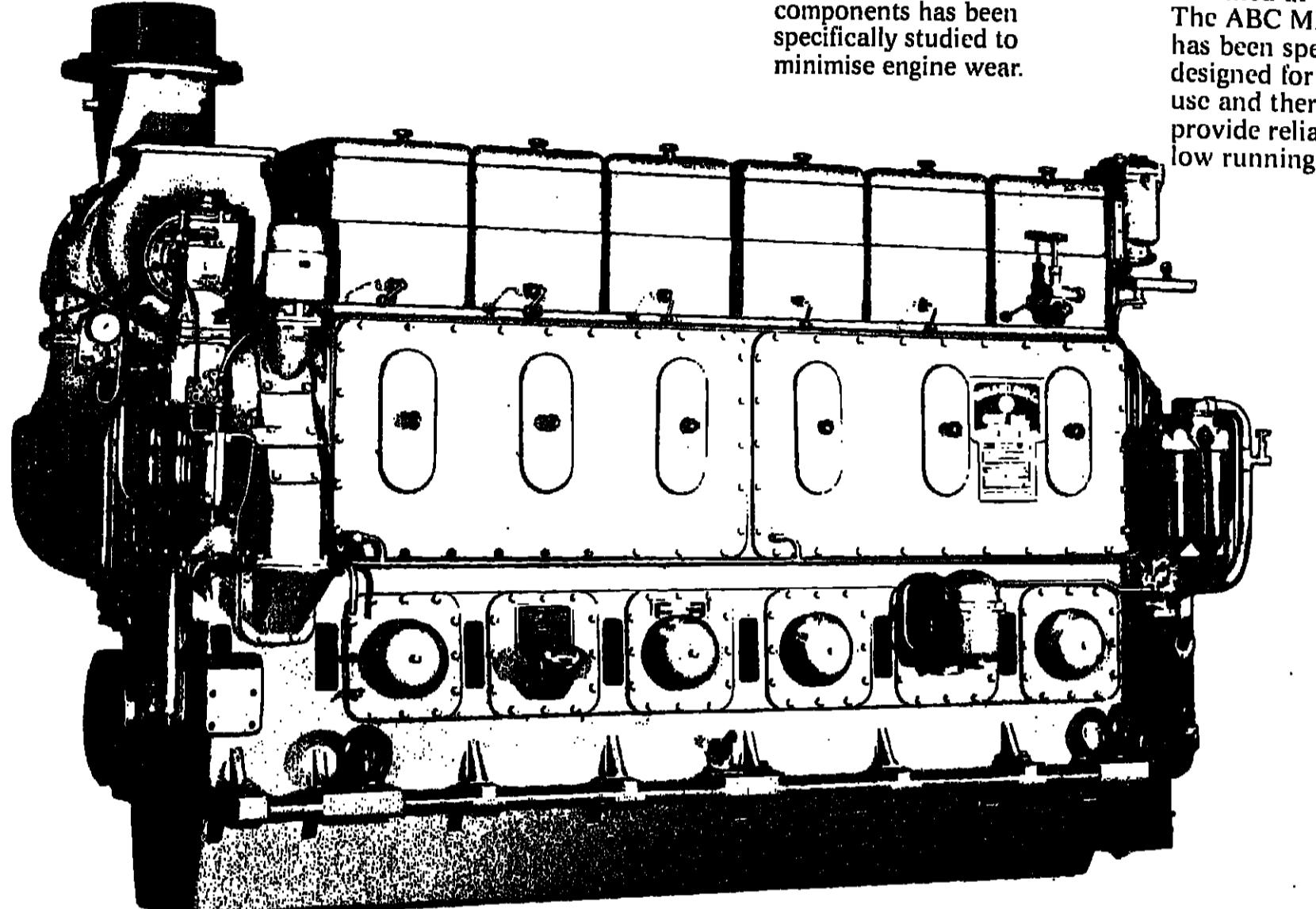
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# There's more to them than meets the eye.

## The 6MDX engine



### Very low lube oil consumption

We claim to be the lowest of any engine within our range.

**Good fuel consumption**  
Average 162 grammes per horsepower/hour with all accessories fitted.

**Very low noise levels**  
The material mass correctly positioned absorbs a considerable amount of noise.

**A dry sump**  
Ensures correct lubrication of all working parts which results in a longer interval between services and less engine wear.

## ABC marine propulsion engines.

Some things about ABC engines you can see at a glance.

The superb design, for instance, for easy maintenance and servicing. And the precision engineering, which makes for ABC's unrivalled reliability.

But there's a lot more to them than meets the eye. Things like their incredible economy, remarkable quietness of operation, excellent torque characteristics—all this means superb value for money.

In addition there is a comprehensive after-sales service, with trained technicians available for routine servicing or in the unlikely event of a breakdown.

Find out more about ABC engines.  
There's a lot more to them than meets the eye.

Quite simply the best value for money you can buy.

The ABC engine range consists of  
**DX 600—750 RPM. 185—1200 HP**  
**DZ 750—1000 RPM. 1050—1800 HP**  
**6PA4 1200—1500 RPM. 720—1335 HP**

**Anglo Belgian Diesel Co. (UK) Ltd**  
12 Clarendon Place, Leamington Spa, Warks., England  
Tel: (0926) 28469/25766 Telex: 311744 ABCUK G

**Anglo Belgian Company**  
Wiedauwkaai 43, B-9000 GENT Belgium  
Tel: (091) 23 45 41. Telex: 11298



## IT BRINGS MORE POSSIBILITY IN YOUR DAYS WITH THE OCEAN

**1 MODEL MF-2D**  
"Best applicable for Yacht sailing"  
Depth Range: 0—1 m, 0—98m  
Digital type available from 10 cm deeper below water.  
Frequency: 200 kHz  
Beam width: 17°  
Battery: DC 12V or 1.5V x 8  
Output Power: 30W  
With Flashing-Superhandy Type

**2 MODEL MF-4**  
"It becomes your companion for fishing"  
Depth Range: 0—30m, 0—60m  
Frequency: 200 kHz  
Beam width: 17°  
Battery: DC 12V or 1.5V x 8  
Output Power: 40W

**3 MODEL MF-4N**  
"A striking Flashing Type"  
Depth Range: 0—80, 0—160m, feet fathom  
Frequency: 50 kHz  
Beam width: 30°  
Battery: DC 12V  
Output Power: 50W

**4 MODEL MF-70**  
Available, regardless of any weather  
Double Frames with Water Proof  
Applicable for cruising  
Depth Range: 0—30m or 0—70 feet  
Frequency: 200 kHz  
Beam width: 17°  
Battery: DC 12V  
Output Power: 60W  
Cassette with a changeable recording paper

**5 MODEL MF-50S**  
"Get a big gain by portable machine"  
Straight Line Recording  
Depth Range: 0—50m, 0—100m  
Frequency: 200 kHz  
Beam width: 14°  
Battery: DC 12V  
Output Power: 40W  
Neon Lighting

**6 MODEL MF-60S**  
Straight Line Recording type to use at shallow water  
Depth Range: 0—100m, 0—200m  
Frequency: 50 kHz  
Beam width: 17°  
Battery: DC 12V or 1.5V x 8  
Output Power: 60W  
Cassette with a changeable recording paper

**7 MODEL MF-111**  
"Ordinary type"  
Best applicable for Yacht sailing  
Depth Range: 0—30m  
Frequency: 200 kHz  
Beam width: 17°  
Battery: DC 12V or 1.5V x 8  
Output Power: 80W  
Cassette with a changeable recording paper

**8 MODEL MF-100**  
Belt attached, easy to carry.  
Straight Line Recording  
Depth Range: 0—130m, 0—280m  
Frequency: 200 kHz  
Beam width: 17°  
Battery: DC 12V or 1.5V x 8  
Output Power: 100W  
Cassette with a changeable recording paper

**9 MODEL MF-100S**  
S.T.C. (Sensitivity Control) set inside and Straight Line Recording type exactly to catch a fish without fail.  
Depth Range: 0—30—60—90m  
Frequency: 200 kHz  
Beam width: 17°  
Battery: DC 12V or 1.5V x 8  
Output Power: 80W  
Cassette with a changeable recording paper

**10 MODEL MF-100C**  
S.T.C. (Sensitivity Control) set inside and Flashing & Circle Line Recording of improvement to catch a fish around the surface of water  
Frequency: 200 kHz  
Beam width: 17°  
Battery: DC 12V or 1.5V x 8  
Output Power: 100W  
Cassette with a changeable recording paper

**11 MODEL MF-300**  
Most Supreme Depth flasher among Flashing & Circle line recording types.  
Depth Range: 0—130m, 0—280m  
Frequency: 200 kHz  
Beam width: 17°  
Battery: DC 12V or 1.5V x 8  
Output Power: 80W  
Cassette with a changeable recording paper

**12 MODEL MF-300S**  
Preferable to Professional Straight Line Recording type equipped with every device  
Depth Range: 0—50—100m  
Frequency: 200 kHz  
Beam width: 17°  
Battery: DC 12V or 1.5V x 8  
Output Power: 100W  
Cassette with a changeable recording paper

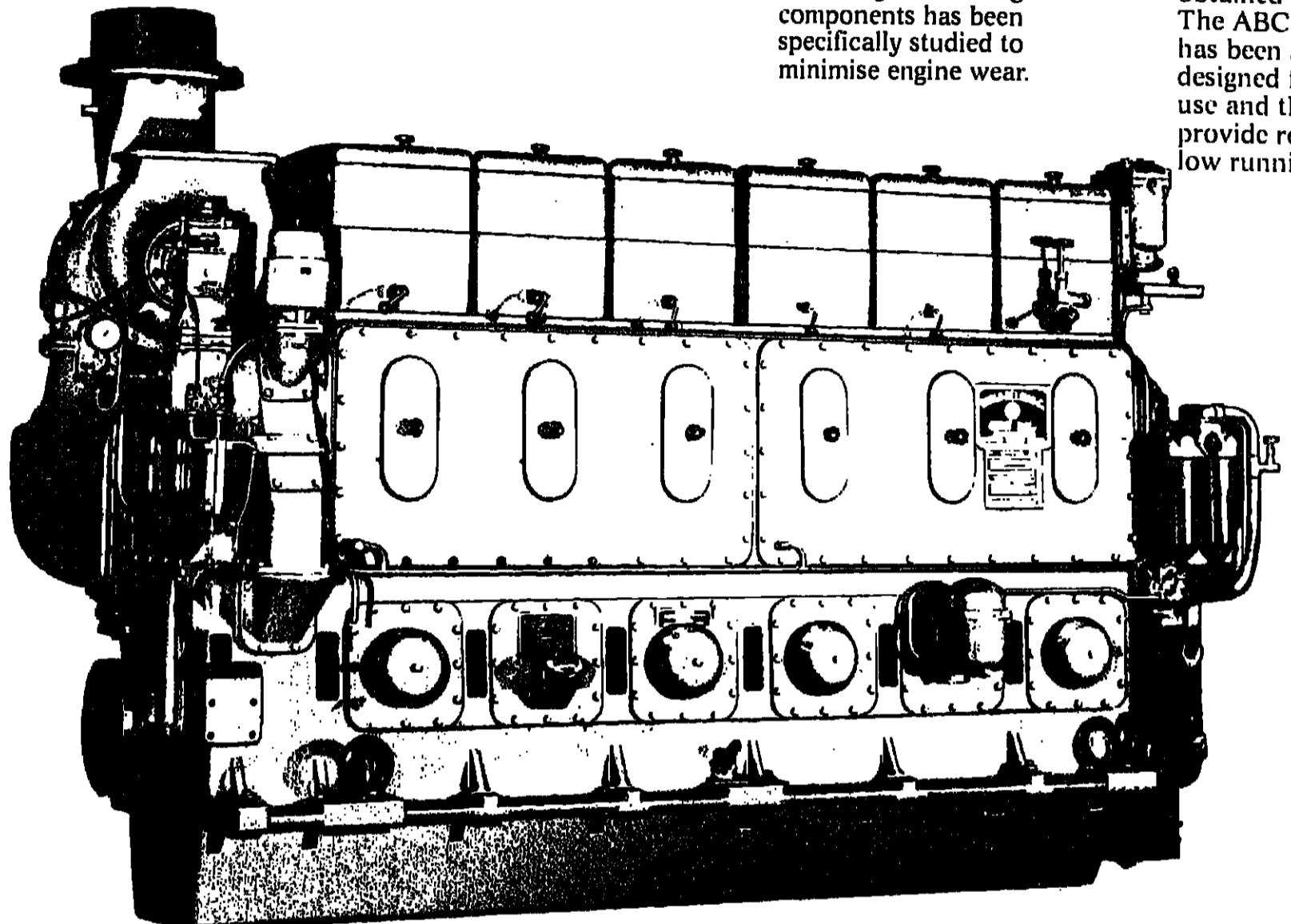
**13 MODEL MF-600**  
Preferable to Guts Guy to challenge the deep sea  
Depth Range: 0—280m, 0—520m  
Frequency: 50 kHz  
Beam width: 55°  
Battery: DC 12V or 1.5V x 8  
Output Power: 80W  
Cassette with a changeable recording paper

**14 MODEL MF-1500**  
Orthodox type for Fisherman's use" Straight Line Recording  
Depth Range: 0—50m, 0—300m  
Frequency: 50 kHz  
Beam width: 30°  
Battery: DC 12—30V  
Output Power: 400W  
Cassette with a changeable recording paper

**15 MODEL FOB-25**  
"Your companion for fishing"  
Excellent speed, small outboard machine  
Power: 2.5PH  
Fuel: Compound oil 25 : 1

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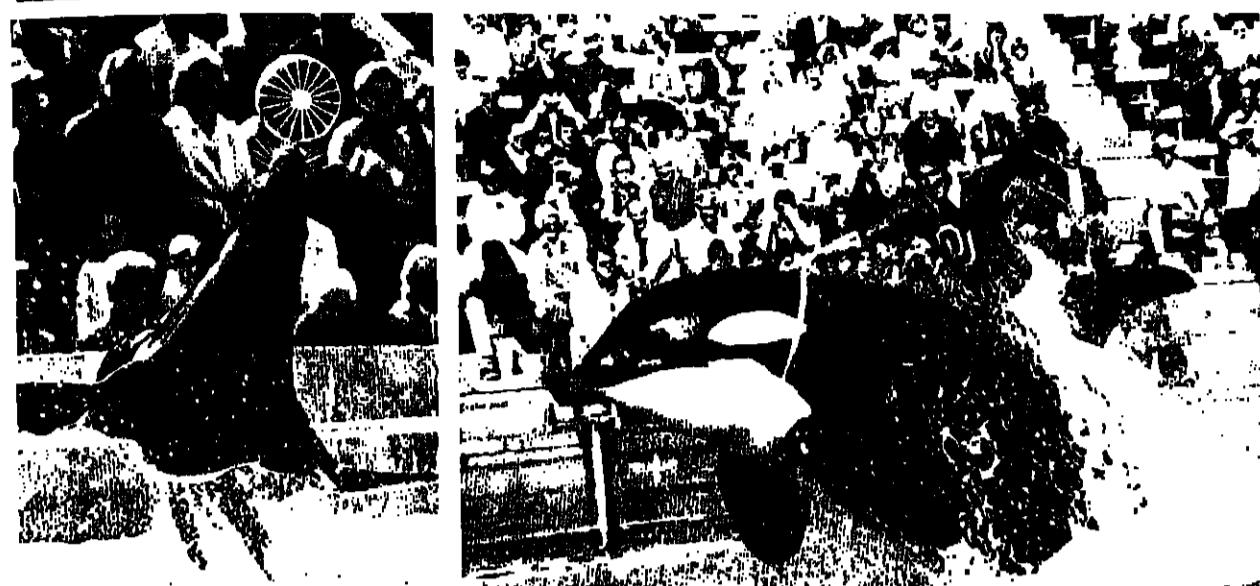
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## SEA WORLD STARS START NEW INDUSTRY



A sea lion does a balancing act... and a killer whale soars out of water to delight of Sea World audience.



Soaring high, a dolphin hits the tether ball.

MANAGEMENT realised that something had to be done or the performers would eat up the profits at Sea World, San Diego, California, amusement park where the show stars are dolphins, killer whales, penguins and sea lions. They pack the seats with paying customers but they also eat from \$60,000 to \$70,000 worth of fish every month.

So, to cut the feed bill, Sea World is going into the fishing and processing business in California and Mexico.

Born at San Diego's Mission Bay, Sea World has spawned twice. There are now Sea World marine amusement parks in Aurora, Ohio, and Orlando, Florida.

The parent company, Hencourt Bruce Janovich, has bought a three-acre processing site in the Los Angeles harbour and will lease it back to Sea World.

President David DeMotte said Sea World has committed \$300,000 to the Mexican joint venture in developing modern fishing and distribution methods in Magdalena Bay, about 200 miles north of the tip of Baja California on the Pacific Ocean.

by an  
FNI CORRESPONDENT

50 tons a month, the company will enter the seafood marketplace and sell to other buyers.

It will also supply its chain of 18 Cap'n Kid's fish and chips outlets, including one at each of the Sea Worlds.

President David DeMotte

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## In 1980, the mermaid of Copenhagen welcomes the world fishing and marine industry.

For visitors and exhibitors alike, the Bella Center in Copenhagen will be the centre of the world fishing and marine industry in June, 1980.

Presided over by the Famous Mermaid of Copenhagen, the World Fishing Exhibition '80 will cover every aspect of international fishing and marine activities. It will be a meeting place for the entire industry.

The World Fishing Exhibition covers the whole spectrum of the commercial fishing industry: ships and equipment for the finding, catching, and processing of fish at sea as well as every aspect of the land-based industry including processing, packaging and marketing. It will also include marine products.

The last event in Halifax, Canada, attracted exhibitors from 14 different countries, and 25,000 visitors from 41 countries. The 1980 exhibition will undoubtedly exceed even this record participation.

Both visitors and exhibitors alike will enjoy the magnificent facilities of the Bella Center, one of the most sophisticated exhibition complexes in the world, and the largest in Northern Europe. Only minutes away from the port where boats may be exhibited. It is located midway between the centre of Copenhagen and the International Airport.

And Copenhagen itself is a superb setting for the 1980 World Fishing Exhibition. One of Europe's busiest traffic intersections, in the busy link between Scandinavia and the Common Market, it has all the support facilities to match this major international event. The world-famous Tivoli Gardens, superb after-business dining and entertainment facilities, and the largest hotel capacity in Scandinavia make it the perfect choice to be the centre of the world fishing and marine industry in 1980.

**The World Fishing Exhibition 1980**  
**The Bella Center, Copenhagen**  
**2-9 June 1980**

**Sponsored by:** World Fishing Magazine  
**Supported by:** Danish Ministry of Fisheries  
Danish Fishing Organisation  
Danish Ocean Fishers Organisation  
Port of Copenhagen Authority  
The Danish Association for Processing and Export of Fish Products

Please send me further information about the World Fishing Exhibition 1980. I am a potential exhibitor / visitor.\*

\*Please delete as necessary.

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Industrial & Trade Fairs International Limited, Radcliffe House, Blenheim Court, Solihull, West Midlands B81 2BG. Telephone 021 705 6707. Telex 332073.



The Southern Night, near completion at Eastern's old yard.

by J. A. FISHER

SINCE 1975 the United States Gulf of Mexico shrimp industry has been experiencing a boom. Landings and prices are up. In the past two years, ex-vessel prices were very high several times, up to \$5 a lb for large-size shrimp.

At times like these, vessel construction activity accelerates too. Such is the case in the Gulf. And a share of it is being taken by small yards building quality boats with that personal touch.

Almost everyone in the fishing industry has heard of yards like Desco in St. Augustine, Florida, and Bender in Mobile, Alabama. But how many know of St. Marks Marine or Phelps, both in Florida? There could be a new trend in the boom — fishing boat construction by the small yard, emphasising custom quality.

If you want a good example of these steel boatbuilding yards along the Gulf Coast, look at Eastern Marine. Located in Panama City, Florida, the company is producing a compact but functional trawler designed to meet the needs of the fisheries there.

#### Fast start

The man in charge of Eastern is Brian D'Isernia. When you get to know him, it's clear why Eastern is off to such a fast start.

D'Isernia did not start in the industry in a conventional way. He first took an undergraduate degree in economics and then a law degree at Fordham in New York. He migrated to the US New England Coast where he acquired his fishing education. He quickly fished and financed his way to vessel ownership and to a partial share in a Massachusetts based dealership, Seafood Distributors.

One thing always bothered

him. Most fishing boats had too many flaws or bugs which tended to magnify at sea. To him, the solution was clear — design and build his own vessel.

Late in 1976, D'Isernia organised Eastern Marine and began the *Mary D*. The 26.5 metre (88 feet) steel boat was sold for use in the black cod fishery on the US Pacific Coast before it was completed. He began a 29 metre boat and sold it immediately to another California black cod fisherman.

Eastern then built a 21 metre Gulf shrimp which was delivered to the Cook Fish Company early this year.

#### All extras

The *Lady Grace* is powered by a GM12V-71. She has all the Eastern extras that are earning them a reputation for quality fishboats — deep draft and keel, 2.5 by 15 cm shoe the length of the keel, rolling chocks, full forecastle, back gougued welds, abundant bracing, 0.8 cm deck and hull.

## BUSY TIME FOR SERIES BUILDERS...

DESPITE the success of a number of small builders, it is the large yards turning out standard hulls in series that continue to supply United States shrimp fishermen with the bulk of their new vessels.

Typical of these are the *Parker Boys* and *Lady Betty*, two standard types recently delivered by Desco Marine of St. Augustine, Florida.

The 68 ft (20.9 metre) long *Parker Boys* is a Desco GRP and wood vessel with a fish hold capacity of 1,742 cu ft (49.3 metres). She was built for Parker and Sons Inc. of Ponte Vedra Beach, Florida.

The main engine is a Caterpillar 3408 diesel developing 365 hp and turning a Columbian fixed pitch 62 by 48 inch propeller through a Twin Disc 6 to 1 reduction gear. She has a McElroy 504 winch.

Built for Donald J. Verret of Bon Secour in Alabama, the *Lady Betty* is a Desco standard 73 ft (22.26 metre) long wood boat with a fish hold capacity of 2,080 cu ft (58.9 metres).

She has a Stroudsburg 520D winch and is powered by a Cummins TK1150-M 365 hp engine turning a Columbian 64 by 46 inch propeller through a Capitol reduction gear.

**KISMA 400**

## How the personal touch is helping the little yards in the US Gulf shrimp boom



The 78 ft (23.6 metre) long shrimp trawler Captain's Pride fitting out in the Eastern Marine wet dock. With her sister boat Southern Night, she will fish out of Ft. Meyers in Florida.

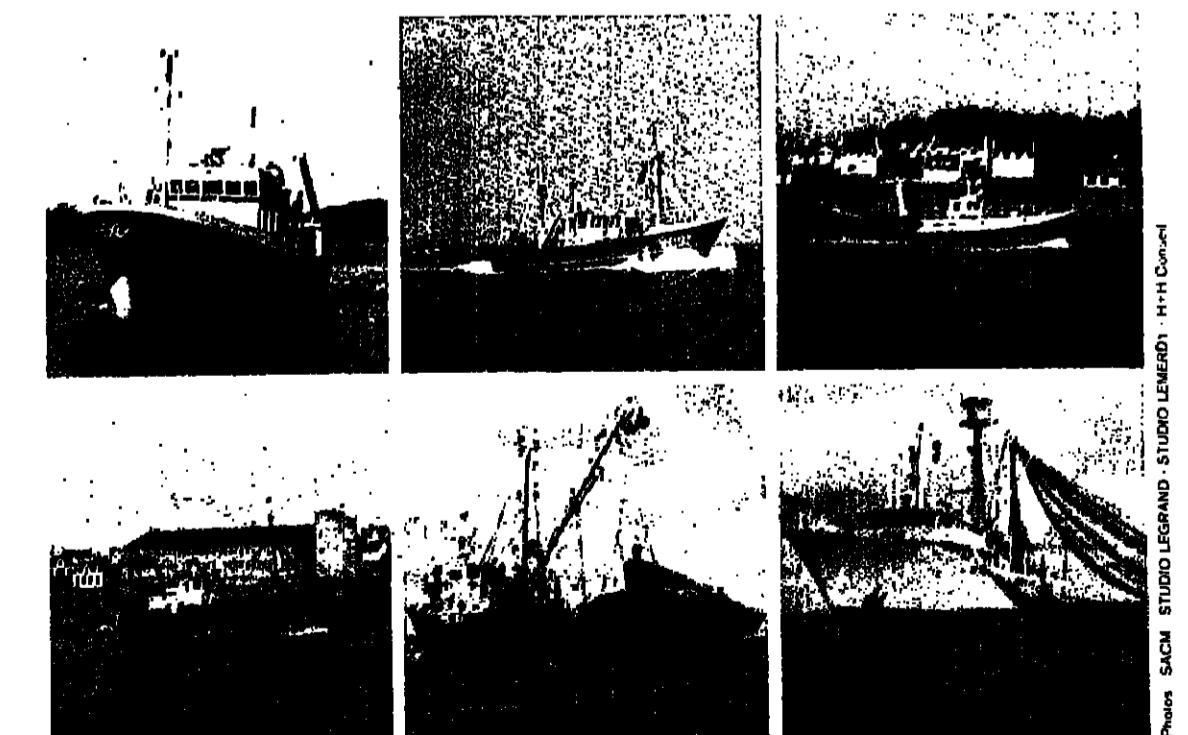
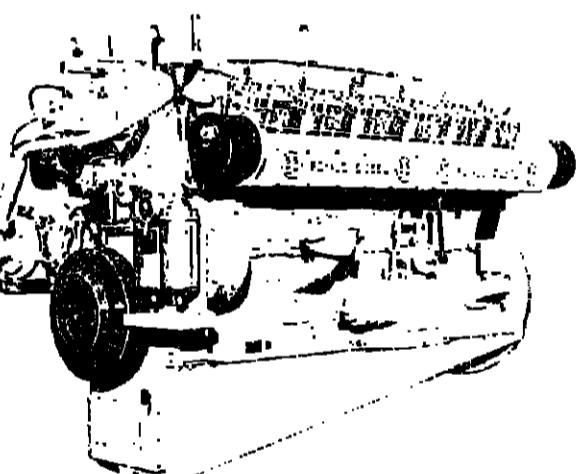
## FOR ALL TYPES OF FISHING VESSELS

### propulsion and on-board electric power

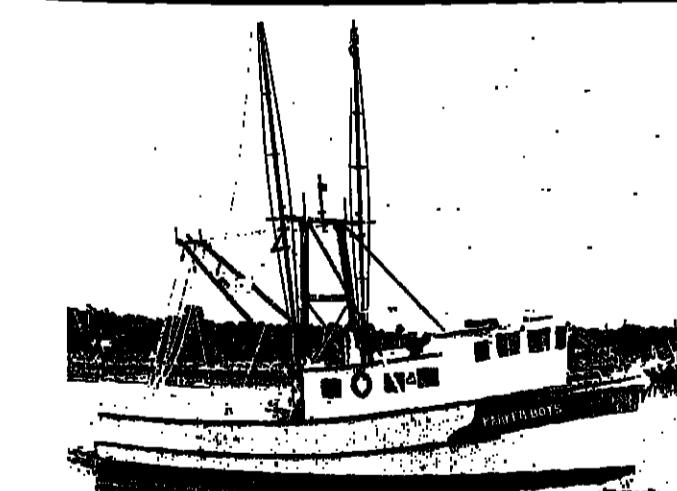
A complete range of engines from 120 to 4100 hp  
DIESEL POYAUD: 135 and 150 mm bore · DIESEL SACM: 175, 195 and 240 mm bore

1	2	3
4	5	6

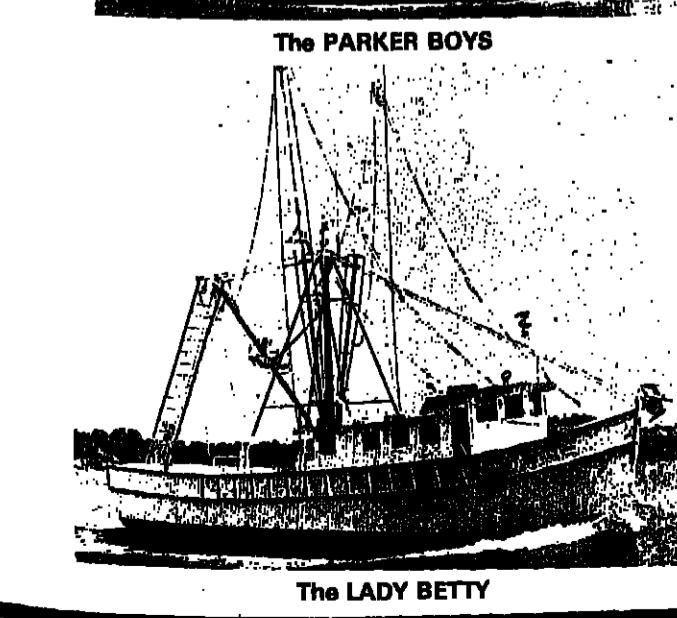
1. Trawler - POYAUD main engine type A 12150 SRM - 600 hp
2. 3. 4. Trawlers with POYAUD main engines type A 12150 M - 440 hp each
5. 6. Tuna purse seiners
  - 1 x 2200 hp SACM main engine type G 12 VS
  - 2 x 340 kVA POYAUD electric power generating sets type A 12150
  - 1 x 220 hp POYAUD type 520 V 8 NS work-boat propulsion engine



Photos SACM STUDIO LEGRAND - STUDIO LEMERY - H-H Coudert



The PARKER BOYS



The LADY BETTY

SALES OFFICE FOR ENGINES UP TO 1000 kW :  
SOCIETE GROSSOL  
14, RUE CHAPTAI - BP 104 - F 92300 LEVALLOIS CEDEX  
TEL: (1) 787.82.90 - TELEX: GROSSOL LVAL 620207 F

SALES OFFICE FOR ENGINES OVER 1000 kW :  
SOCIETE ALSACIENNE DE CONSTRUCTIONS MECANIQUES DE MULHOUSE  
1, RUE DE LA FONDERIE - BP 1210 - F 68054 MULHOUSE CEDEX  
TEL: (68) 46.01.08 - TELEX SACM 881699 F

## SALMON SALES GROUP SET UP

TROUT and salmon farmers in Norway have set up their own sales organisation.

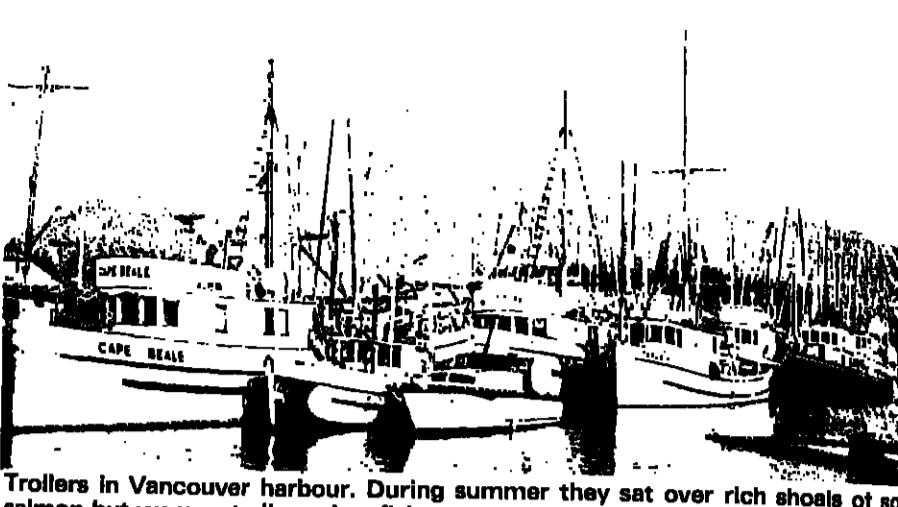
The Fiskerioppdretterne Salgslag A/L is based in Trondheim. It will have sole first-hand sales rights to the fish produced by its members. It will also have the right to set prices and to regulate production and turnover.

The production of farmed fish in Norway now amounts to about 4,500 tons a year. Salmon accounts for 2,800 tons and rainbow trout 1,700 tons.

This output has a first-hand sale value of 150 million kroner (over £15 million).

# A fishery where no-one is satisfied!

THE International Pacific Salmon Fisheries Commission (IPSFC), which regulates the lucrative Fraser River fishery, has to wear kid gloves while trying to do its job effectively.



TROLLERS in Vancouver harbour. During summer they sat over rich shoals of sockeye salmon but were not allowed to fish.

LES RIMES on the squabble for salmon in British Columbia

There's always somebody who is dissatisfied with its decisions.

Its main job is to divide the catch 50-50 between United States fishermen and Canadians and, at the same time, regulate catches so that sufficient spawners can proceed up the river to perpetuate the fishery.

But there are other considerations: it must allow for catches by Indians who fish the upper stretches of the river to provide food for themselves. And it has to keep a balance between fish caught by trollers, gillnetters, and seiners.

During the summer, the Indians and the federal fisheries department almost went to war when officials ordered that the Indians must stop fishing to allow the sparse escapement of spawners to reach the spawning grounds.

### Indians argue

The Indians countered by arguing that they should not be cut off because of poor management practices. They also argued that before the white man came the rivers were not polluted and there was an abundance of fish for everyone.

Fisheries officers alleged the Indians were not only catching fish to feed themselves; they also were catching fish to sell to the public.

As that problem faded away, at least temporarily, a new problem arose with the troll fishermen. In early August, the rich Adams River run of sockeye salmon was stalled, because of warm ocean currents, off the west coast of Vancouver Island where the trollers were fishing — and the troll fishermen were in a position to reap a rich harvest.

But the fisheries officials closed the area to them.

Officials claimed too many fish might be caught off the west coast, upsetting the balance. The fishermen, on the other hand, felt that if the fish were in a location for them to catch, they (the fishermen) should be allowed to catch them. And they accused the officials of regulating the fishery to benefit the major fishing companies.

In this milieu, the IPSFC is putting data into computers and bringing out figures to ensure that sufficient salmon are allowed to escape the trollers, the gillnetters, the soakers, the Indians, and the tourists to reach the spawning tributaries of the river. At the same time, the IPSFC is having to see that the catches are shared equally by Canadian fishermen and US fishermen, otherwise there could be the making of an international fish war.

Seiners have been complaining about the gillnetters — and the gillnetters have countered with complaints against the seiners.

The purse seine fishermen own enough boats with enough efficient gear to catch the entire harvest of salmon along the British Columbia coast. They say theirs is the most-efficient way of fishing — and what is the most-efficient is also the most-economical.

Yet, often, the purse seine fleet has to stay outside an inlet, or bay, while gillnetters are allowed in to make highly-lucrative catches. And some seine vessel owners claim that, while the gillnetters are making bonanza catches, they are also losing fish, because fish left too long in a gillnet will "drown" and drop out of the net, dead.

Since more members of the United Fishermen & Allied Workers Union are gillnet members, the union tends to side with them against the purse seiners.

Thus, the Indians are complaining they are not getting their adequate share of the limited Fraser River sockeye runs. The trollers are complaining they are not being allowed to take their adequate share. The seiners complain because of what they allege to be wastage by the gillnetters. And the gillnetters say the seiners are too big and too efficient.

Meanwhile, all the commercial fishermen are upset by the sports fishermen who, they say, are taking too large a share of the catch. They are particularly resentful of some United States tourists who visit Canada each year in their caravans and "commercially" can over-the-limit catches, returning to their homes and selling their choice Canadian salmon to their neighbours.

### Campfire songs

To compound the problem, the Canadian fishermen often find they are unable to tie up to a government wharf, financed with their tax dollars, because the entire berthing is occupied by US yachts whose owners are sitting on the beach around a campfire, cooking over-the-limit harvests of clams while singing "America the Beautiful."

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# COMPUTER TO HELP BIG UK FLEET OPERATOR

## Where trawler crews can earn £15,000 a year

DECKHANDS aboard Dutch trawlers earn nearly £15,000 a year, Cork District Court was told last month when ten Dutch owners claimed £168,450 from the Irish government over the arrest of their boats last year.

The claim, arose out of the detention of the trawlers in Cork harbour for 5½ days in April 1977. Rory Conway, solicitor, making the claim gave the following breakdown.

### Harbour dues

Harbour dues and pilot fees £500; Agency fees £375; Expenses of three owners who travelled to Cork for the trial £1,350; Cost of bank guarantee for the trawlers £6,250; Wages for crew members £61,875; Lay-time (cost of keeping the vessels in Cork, overheads, etc.) £98,000.

The Irish Government Order extending limit provisions for its fisheries unilaterally was declared illegal by the European Court of Justice last February.

### Court ordered

Mr. Conway said that the original case had been referred to Luxembourg, where the court held in favour of the Dutch owners. The Luxembourg ruling ordered that the trawler owners be paid costs and that the District Court in Cork should fix these.

Instead of aluminium,

the gondola is made of a reinforced plastic. The use of advanced technology and construction methods will enable series-built models to be sold for about half the cost of similar machines built by conventional methods.

### ISRAEL BUYS SARDINE

THE CANNING industry in Israel has undertaken to buy the entire local sardine catch at prices 32 per cent above those paid in 1977.

Over the past two seasons, catches have amounted to only 300 tons a season, compared with the usual 1,200 tons.

Israeli fishermen say this is due to competitors from the Gaza strip who, they allege, are using modern, improved nets which enable them to pull in around 700 tons a season.

CALEY Fisheries Ltd., of Peterhead, Scotland, has ordered a Philips Data Systems Computer costing £14,000.

The firm was founded in 1935 and acts as agent for many fishing vessels in and around Peterhead.

"We form partnerships with many fishing vessels owners and handle all administrative aspects of the boat," explained James Brown, company secretary. "As part of the Associated Fisheries Group, we act for a large fleet of vessels based in Aberdeen, Buckie, Fraserburgh, Peterhead and Ullapool accounting for a large proportion of the total fishing fleet being operated in this region.

"As well as the fishing vessel aspect, we

also have a large chandlery department and a subsidiary company called Caley Oils, which distributes fuel oils not only to the fishing industry but to mainland businesses as well, including farms."

Caley Fisheries' investment in the fishing industry has grown very rapidly in the last four years. With 80 staff and a diversifying operation, Mr. Brown found it difficult to obtain relevant management information.

"Using our mechanical and manual accounting system," he said, "I could not get the necessary facts and figures at the time they were important.

"The computer is necessary to revolutionise our accounting procedures and speed up basic routines as well as provide important management statistics."

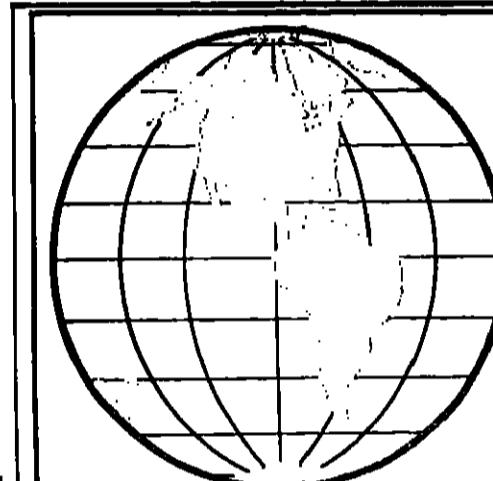
## Cochin gets new harbour

INDIA'S Minister of State for Shipping and Transport, Chand Ram, opened the first stage of the fishing harbour at the south-west coast port of Cochin on September 8.

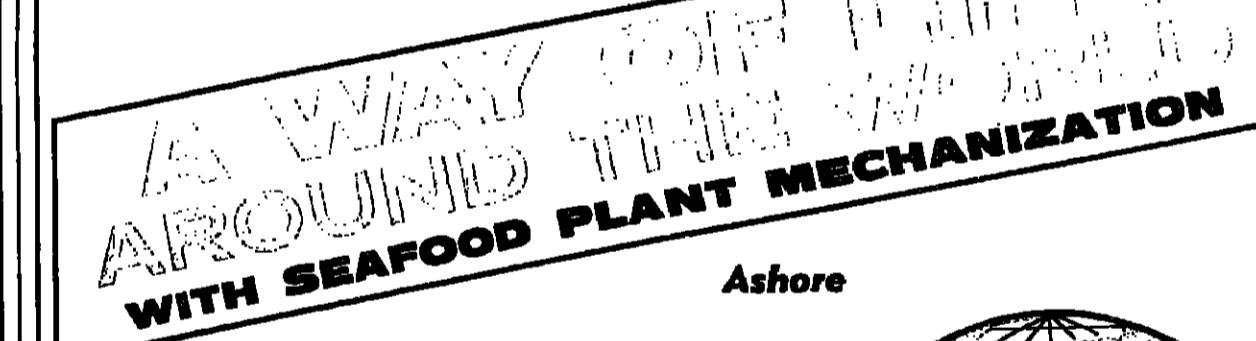
This Rs35 million (about £2.2 million) mechanised boats for working coastal waters, and a large number of sail-powered country craft. It has a wharf 360 metres long.

The harbour has been

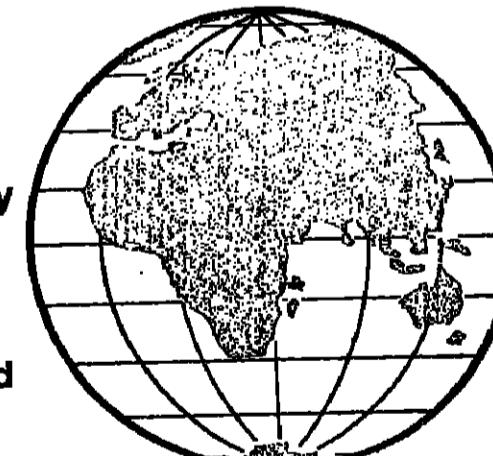
Worldwide



Afloat



Ashore



Sort-Rite International, Inc., has supplied specialized Seafood Processing Machinery and Engineering Services to the Seafood Industry worldwide for the past thirty years.

The Sort-Rite Shrimp Grader is considered the Standard of the Industry. Sort-Rite also manufactures Pneumatic Unloading Equipment which unloads shrimp or fish from the vessel hold and transports the product into the processing area.

Sort-Rite offers complete Engineering in the preparation of plant layouts and proposals.

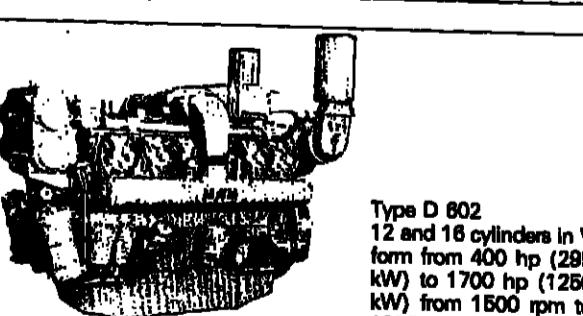
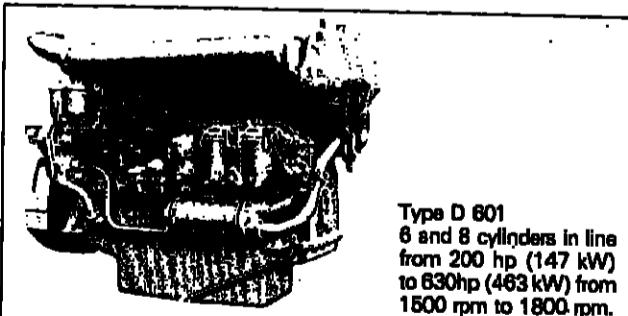
Sort-Rite specializes in Conveying Systems, Wash/Receiving Tanks, Ice Transmission Systems, and Glazing Equipment — all fabricated of corrosion-resistant stainless steel.

## SORT-RITE INTERNATIONAL, INC.

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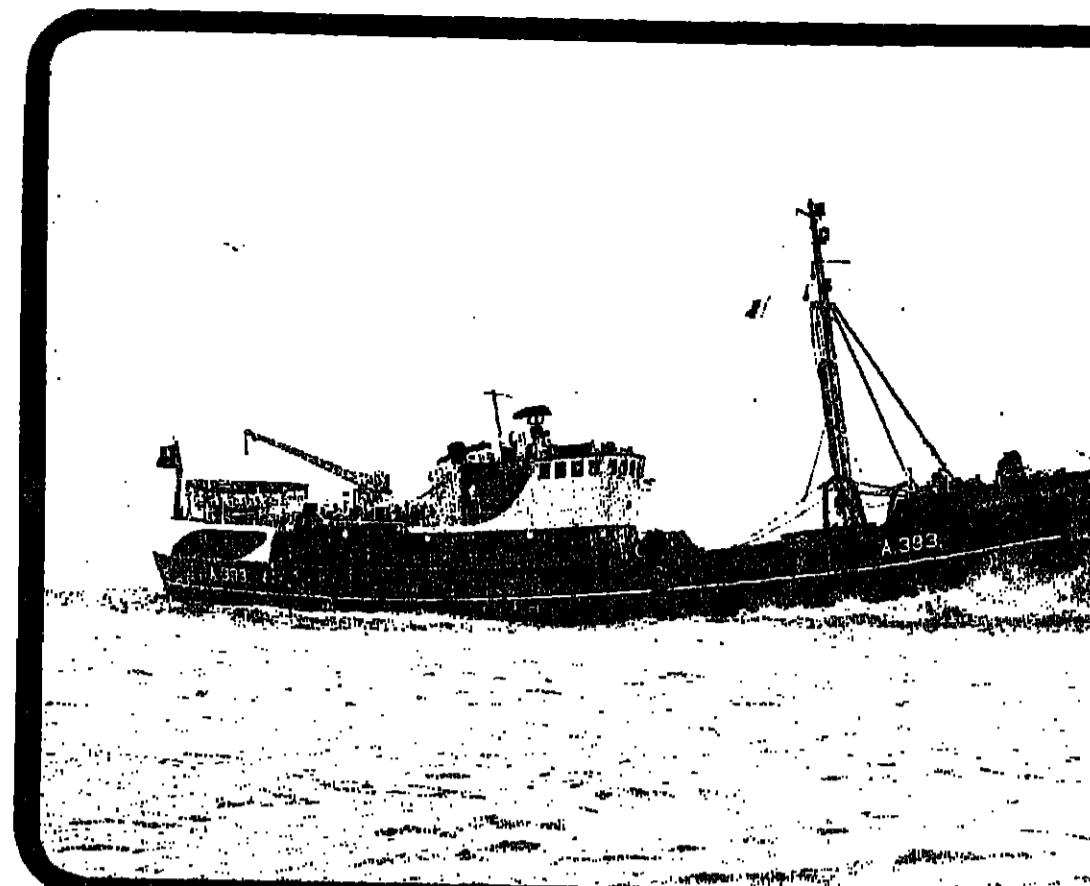
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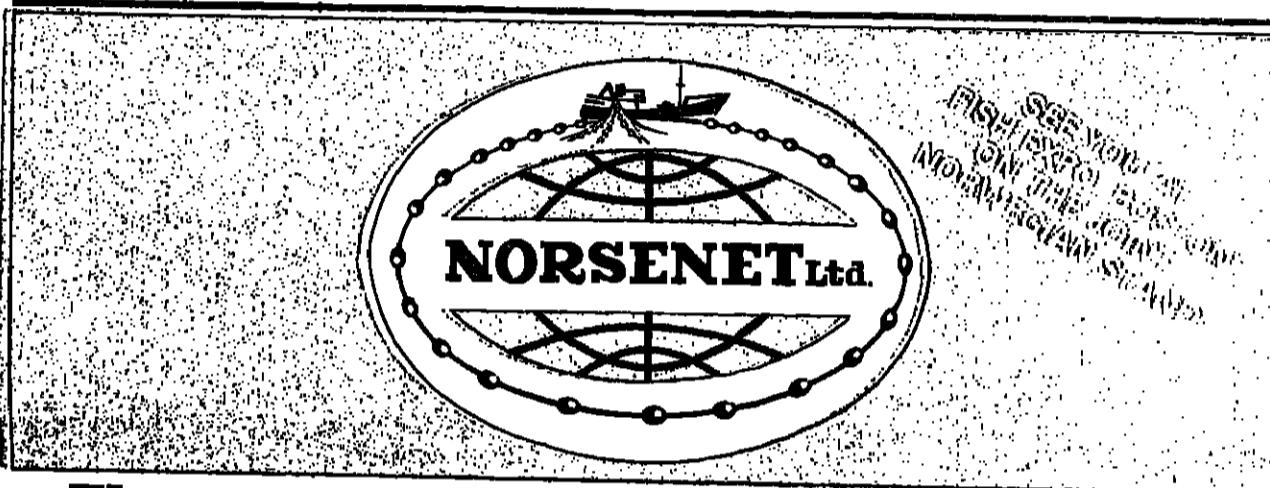
Type D 601  
6 and 8 cylinders in line from 200 hp (285 kW) to 630hp (463 kW) from 1500 rpm to 1800 rpm.

Type D 602  
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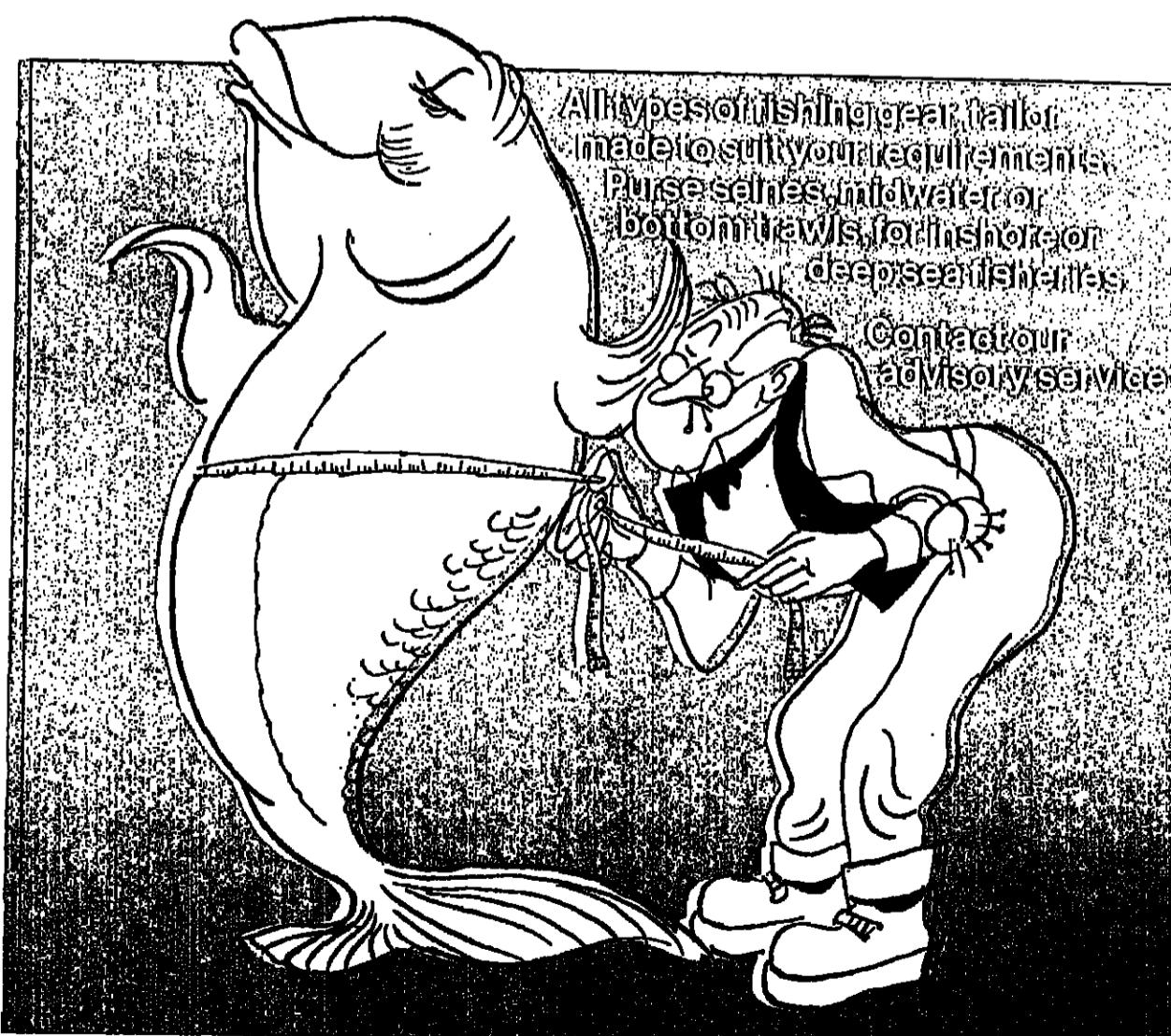
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AS A SECOND

# Scots

A SECOND Scottish fishing vessel is to go autolining and it could be the beginning of a surge into this method of catching. The ship is the 115 ft. (35 metre)-long, diesel-powered side trawler *Grampian Crest*. Behind the project is a consortium of four partners, backed by the Highlands and Islands Development Board.

The Breasclete Fishing Company Ltd., with a share capital of £100,000, has been set up to run the venture, which will supply a new drying factory on the Isle of Lewis in the Outer Hebrides of Scotland.

Two Scottish skippers, Alex Anderson and George Barclay of Ayrstruther, are among the four partners. There is also George Craig and Sons Ltd. of Aberdeen, owners of the *Grampian Crest*, and Lewis Stokfisk Ltd., a company jointly established by the HIBD and Norwegian interests to run the drying factory.

Conversion of the ship will be carried out by the Wood Group of Aberdeen. She is expected to begin supplying the factory, at Breasclete, at the end of October.

### First vessel

The first Scottish autoline, the 114 ft. (34.75 metre) *Anni Elisabeth* (owned by the Macleod family of Stornoway) has made several successful trips since having the Mustad autoline system installed in Norway earlier in 1978. She will also supply the Breasclete factory.

Aged 48, Skipper "Eck" Anderson is one of the youngest of the East Fife skippers brought up in the tradition of manual longlining.

Line fishing was once a large section of the industry in Scotland, particularly on the east coast. But with the growth of trawling the method declined and only five vessels now operate using the traditional methods. These involve hand baiting and no one in the industry can see it surviving the present generation.

### Species needed

These are among the fish required by Lewis Stokfisk. The company was formed by the HIBD jointly with A/S Knut Stoknes of Alesund. It is introducing a new fish drying operation in the factory which the HIBD has just completed at Breasclete. Its product, stokfisk, has

## Stormy time

CANADA'S two west coast weather ships *Vancouver* and *Quadra* — take turns patrolling off Station Papa, 500 km off the British Columbia coast. They send weather information and storm warnings to coastal stations which, in turn, broadcast the data to fishing vessels.

But the Federal government now has announced it is going to phase out the weather ships in about two years' time; and fishermen are worried that they won't be able to receive storm warnings, reports Les Rimes from Vancouver.

### Fishing boats hit

Acting regional director of the Atmospheric Environment Department, Mr. Frank Williams, said: "The ability to forecast storm development in the time

SHIP IS CONVERTED...

# move into autolining

### Consortium is formed for dry-fish plant on Lewis...

markets in Scandinavia, the European Continent and Africa. The preferred species is white ling, but the factory also requires blue ling, tusk and saithe.

The second partner in the Breasclete Fishing Company, George Barclay, is well known as a skipper in trawl and line fishing in Scotland.

### Trawler firm

The third partner, George Craig and Sons, is a long-established fishing company. Although involved in trawling and oil support operations, the company's principals have family connections with the longlining side of the industry. For them, involvement in the autolining development is also an updating of earlier techniques.

Commenting on the project, Rear Admiral David Dunbar-Nasmith of the HIBD said the partners had a wealth of experience

frame 12 to 36 hours will be hurt the most. This will mostly be a danger to fishing and other slow moving ships."

A spokesman for the Federal Fisheries Department agreed that fishing boats would suffer most.

"If fishing boats are not in a position to get the offshore weather forecast there will be an effect," he said. "But, if there is work to be done and dollars to be made, the boats will go out. They would be taking more of a chance of running into foul weather, however."

The weather ships are said to be top-heavy. They have had to have concrete dumped in the holds and some of the deck gear was not installed for fear of increasing the top weight. The ships also have to use expensive helium for their weather balloons because highly-explosive hydrogen tanks could not be stowed in the ships' holds.

## WARNING ON GROWTH IN NORWAY

NORWAY'S Prime Minister Odvar Nordli has warned that there are limits to the future expansion of his country's big fishing industry.

Speaking at a Labour Party meeting at Kvalsund in Finnmark, he said the government's Long-term Programme for Fisherries had been drawn up along four basic guidelines:

- Fisheries policy must be adapted to exploit the potential of marine resources.

- It must be developed in the light of its significance for certain areas of the country.

- People in fishing must be guaranteed incomes comparable with those of other industrial sectors.

Catches must be so exploited that there is optimum coverage of the world's nutritional needs.

The most difficult task in the domestic fisheries policy, said Mr. Nordli, was to ensure the balance between the fishing fleet's capacity and production, and the available resources.

Soon, the Norwegian government will appoint a committee to examine all aspects of its concessions policy in the fisheries so that it can get full view of these problems and seek the best solutions.

Mr. Nordli saw the establishment of a 200-mile zone in many ways clarifying the situation in this international industry and creating a better foundation for the years ahead.

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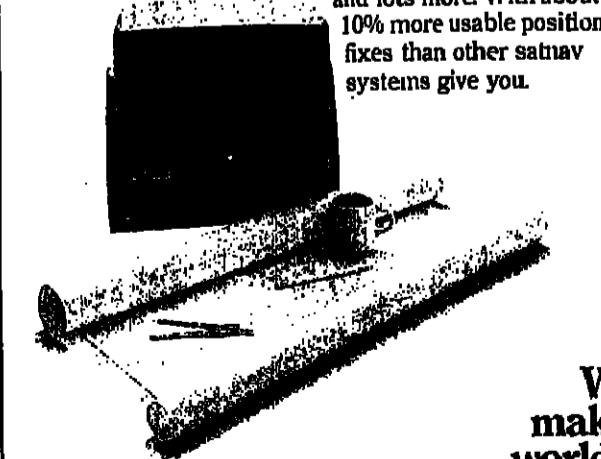
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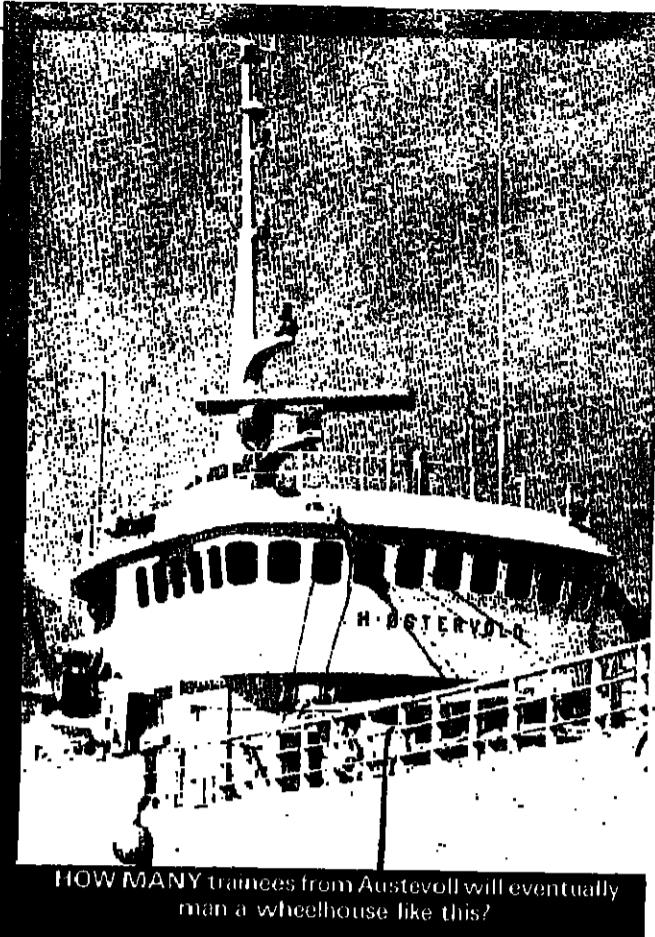


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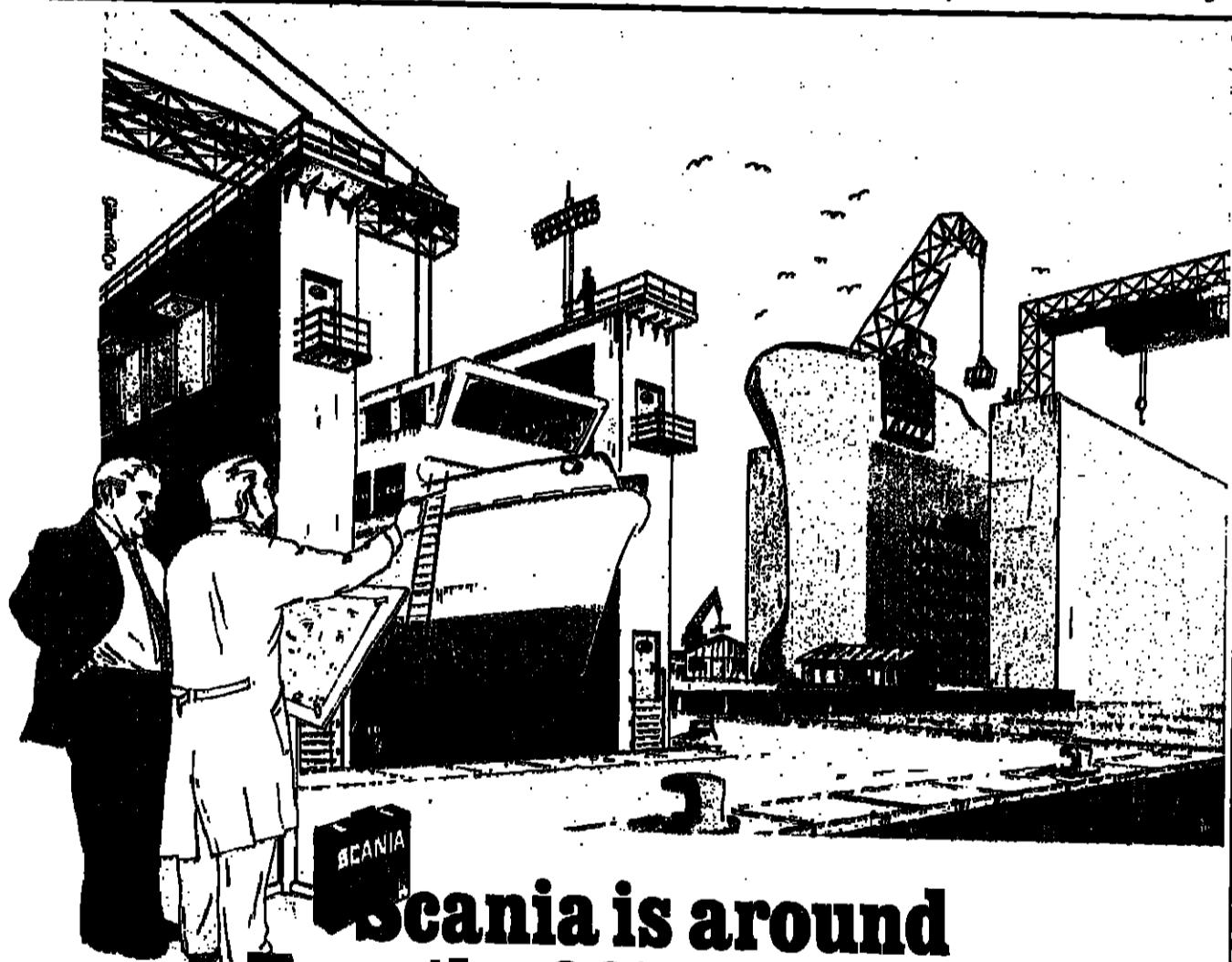
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# training at AUSTEVOLL



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Scania means more

THE NEWEST of Norway's five training schools for fishermen was opened in August at the important fishing port of Austevoll, on the west coast, south of Bergen. Costing 6.6 million kroner (about £650,000), the new centre has been relocated from cramped quarters at Laksevaag.

Any Norwegian seeking a career in fishing and who has completed the national nine-year primary education, can apply to attend the school. Candidates for fishermen's certificates get free board and lodging and home travel during the holidays.

With its teaching staff of eight, the school can take 70 trainees.

Above the basic fisherman level, there are more advanced courses leading to qualifications as skipper or foreman. The latter involves intensive work on various kinds of catching gear and instruments.

The basic curriculum is divided into three subject groups: fishing gear, nautical subjects and fish finding equipment, and catch techniques and fish handling.

There are also five hours a week of basic science, including oceanography and marine biology and two hours of electives for a 35-hour week total.

This course, lasting one year, also qualifies for the 2nd class skipper examination.

To get the fisherman ticket, an additional 12 months of practical work in a fishing boat is required.

This period of supervised and regulated work is intended to give all-round training aboard a modern boat. Progress is registered in a personal log that follows the candidate throughout the course.

A fisherman can also earn his ticket without taking the courses by completing three years' practice.

Another year of systematic training at sea and a one-year course can lead to the fishing boat skipper certificate. This requires an examination and a total of 42 months' practice.

Instruction concentrates on navigation, theory of ships, and sciences with English, book-keeping, fishery law and additional work on fishing gear and methods among the required subjects.

An alternative leading to qualification as net man is half-a-year of instrument training and instruction, emphasising the construction, function and operation of the trawl. With 12 months practice on a trawler, this gives the status of country's purse seiner fleet.

The entire training programme for fishermen has been revamped in recent years and has not yet attained a permanent form, says school principal Erik Rosenvold. A more rigorous curriculum for prospective skippers has been urged in order to give them a more thorough knowledge of the behaviour of ships.

From 1979 the Austevoll school will also offer training in aquaculture. The farms are already developed and run by personnel from the Institute of Marine Research in Bergen.

There are plans to acquire two training craft: a 50-60 ft. boat for basic training at the disposal of the school, and a 110 ft. combination vessel for use nationwide by all the training schools. Training in instruments will take place primarily aboard these vessels.

## HOME OF THE BIG PURSE SEINER

special report for FNI by NICK WADE



AUSTEVOLL is the home of the best of Norway's purse fleet.

THE OPENING of the new training school further enhances the high status of Austevoll as a leading fishing centre in Norway and a base for some of the top ships in the country's purse seiner fleet.

Ships such as the *Stora Haugan* and *Gerda Marie* are based on this community which has always lived off fishing.

Seafaring fishermen from Austevoll, venturing out for cod and herring, are mentioned in written records from the 17th century. The spawning cod and the herring they provided them with a livelihood in the 18th and 19th centuries.

Nowadays in Norway to see the possibilities of the power block when it was introduced in 1962. Within a few years Austevoll built up a fleet of 12 purse seiners, in about the same time that the Norwegian purse fleet was growing to 456 boats.

These were the years of the phenomenal catches of Atlantic Scandan herring, later found to have been also catastrophic: 1.54 million tons in 1965, 1.95 million tons in 1966, while mackerel catches were around 800,000 tons yearly.

Consisting of some 300 islands (of which 10 are inhabited) an hour south of Bergen by hydrofoil, Austevoll is one of the two most important fishing communities in Norway in terms of fleet and catch in relation to population.

In the population of 4,000, there are 500 active fishermen and 233 registered fishing vessels. Of these, the most important are the 32 deepest purse seiners that could catch about 20,000 tons of pelagic fish a trip.

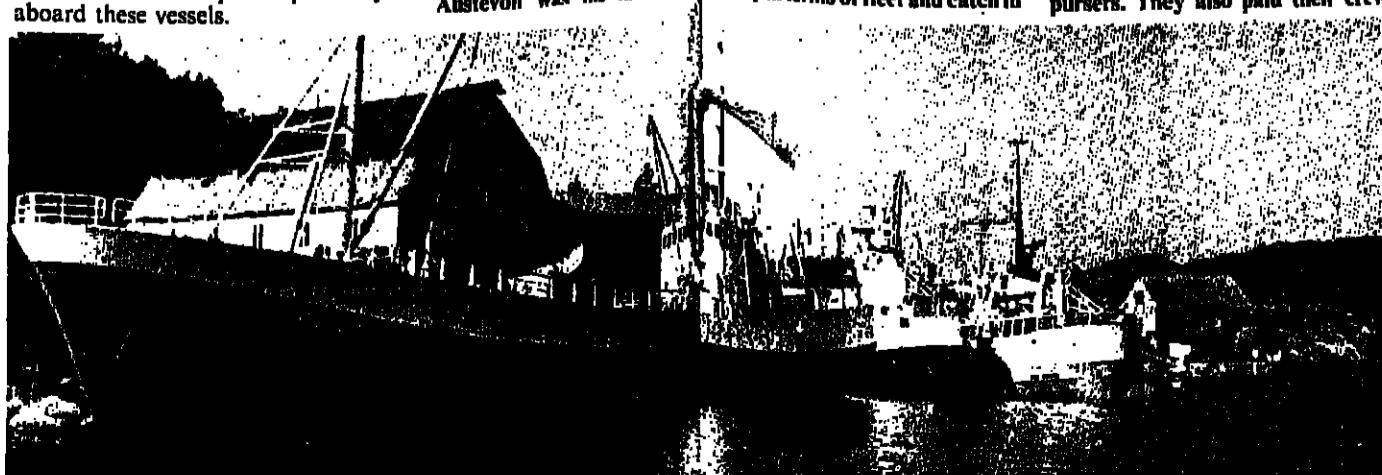
Ships from Austevoll caught 268,000 tons of Norway's record capelin catch in 1977 of 2.1 million tons.

Austevoll boats participated in the spring blue whiting fishery this year and took about 18,000 tons of the total 115,000-ton catch.

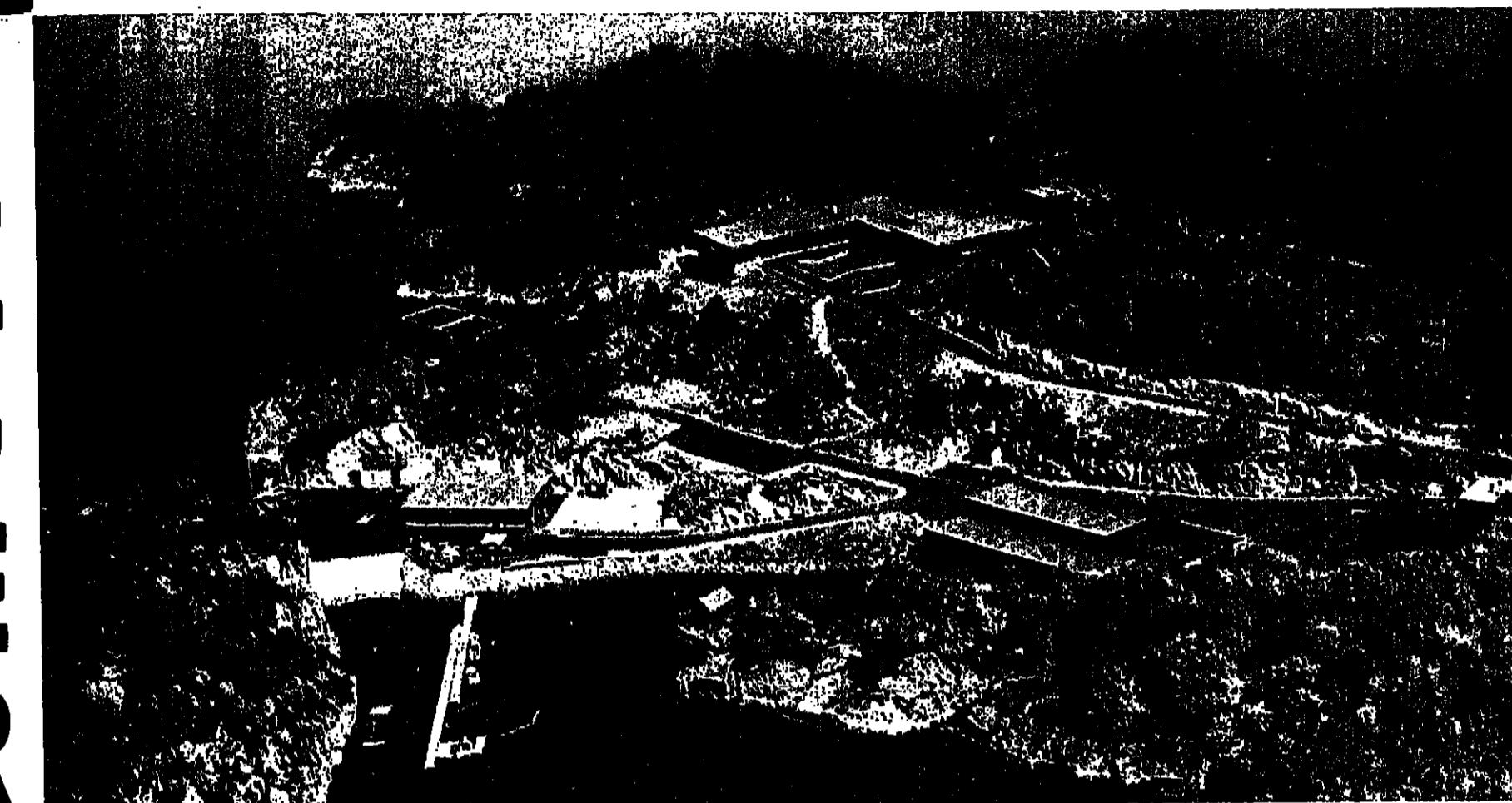
In value, 97 per cent of the catch of all kinds of fish made by Austevoll vessels in 1977 came from the purser. They also paid their crew

### To Shetland

### 4.



PART OF the Austevoll fleet. The area supports some of the most important fishing communities in Norway. It is also one of the country's most



THE new training complex from the air. The fish farm station can be seen on the left.

going slow on new applications. At 272 boats with a total capacity around 140,000 tons, the Norwegian purse fleet is already considered too big by just about everybody.

Young fishermen wanting to invest in their own boats are told now not to count on getting purse concessions. But the average age of the fleet is 24 years, with the newest purse, *Ah! Mogster's Laford*, just delivered. Three more of the oldest ships, some of them converted whalers, will be replaced this year.

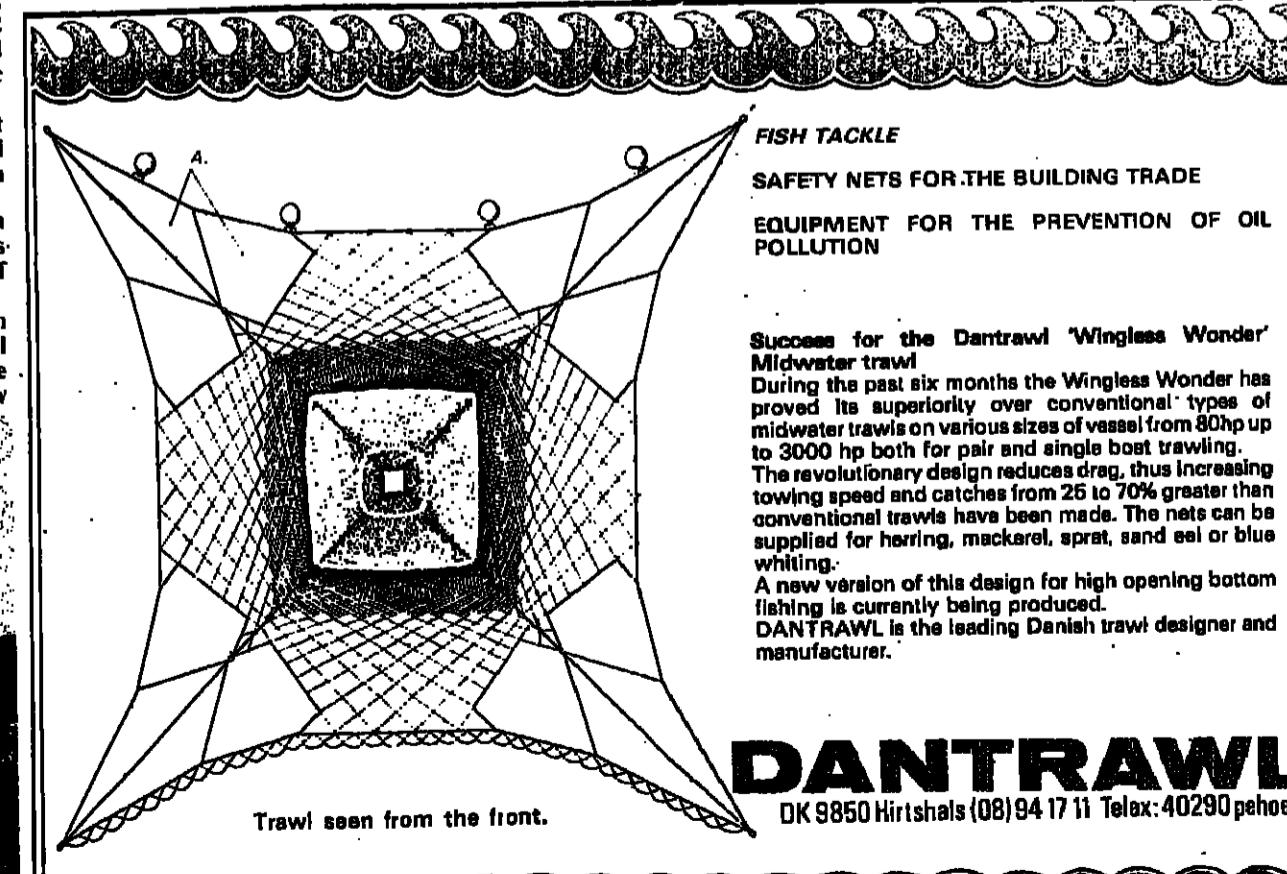
There is mounting interest in Austevoll in white fish trawling. The Fisheries Department is considering nine applications for 110 ft. (33.5 metre) combined trawl-net-longline-Danish seine boats.

One skipper owner, Martin Thorsen, has bought a seiner in Denmark. He has rechristened her *Stolmavug* and is acquiring the

trawling techniques about which he says the Norwegians have everything to learn from the Danes and the Scots. With Norway planning to phase out third country fishing in the North Sea by 1985, Austevoll plans to get its share of the estimated 250,000 tons of white fish to be taken annually.

Austevoll has also the beginnings of a fish farming industry and great expectations for it in the near future.

There is small electronics industry on the islands, some dairy and subsistence farming, including wool harvesting from a race of wild sheep known in Western Norway since the first millennium and surviving today only in Austevoll.



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## TRAINING TOPICS

# Preparing for fishery needs in Sri Lanka



REPAIRING a net on a beach in Sri Lanka. Small-scale fishermen are in urgent need of nets, and repairing is an essential part of the fishing operation. Picture by FAO.

IN Sri Lanka, writes our FAO correspondent CEDRIC DAY, the development problems facing the government and the needs of the fishermen will bring about far-reaching changes in the immediate future.

For example, the increase in mechanised vessels in the small-scale fishery, and the proposed introduction of a number of large trawlers will require an expansion in the island's training facilities and capacity.

The Training Institute in Colombo is concerned with providing trained crews for trawlers while four other centres — one on each coast — look after training for small-scale fisheries.

The Centre at Negombo, for example, can take 25 trainees at a time. Those in engineering and the care and maintenance of engines have a year's course, while those concerned with the operation of fishing gear have a six-month course.

## More diversity

Perhaps the most important aspect of the present situation is the need to give more diversified training to meet the requirements of small-scale fisheries. The interest aroused in the possible development of big commercial fishing should not be allowed to obscure the fact that the small-scale fisheries will remain dominant and the most productive sector in Sri Lanka.

The increasing need for trained manpower for more effective operation of the improved boats, gear and fishing methods, including fish handling, must remain a first priority in the national training programme.

A visit to Galle was noteworthy as a warning in respect of large-scale development activities. There, a harbour for deep sea fishing vessels has been constructed but few have used the facilities so far. These include a commissary freezing and ice and cold storage plant. The total cost was about 40 million rupees but when I was there less than 10 per cent of storage capacity was in use.

## Practical way

The most practical way of deriving a reasonable level of use from the harbour and plant appears to be the development of the tuna fishery (which starts at a distance of 15 miles from the shore) perhaps through a joint venture.

On the other hand, there were hundreds of boats along the beaches all the way from Colombo to Galle and fishing activity in evidence everywhere.

An investigation into the requirements of the small-scale fishermen showed that, in general, they were in urgent need of nets. Their shortage in this respect is said to be about 50 per cent.

## CARIBBEAN INSTITUTE GETS MORE HELP

A NEW agreement to give further assistance to the Caribbean Fisheries Training and Development Institute has been signed by the governments concerned, FAO and the UN Development Fund.

The Institute, located in Port of Spain, Trinidad, and serves Barbados, Guyana, Tobago and Trinidad. It has been in operation since 1974, assisted by UNDP and FAO.

More than 1.3 million dollars were provided but, due to financial stringency, not all the required aid could be given, hence the new agreement to complete the assistance programme.

The objectives of the new agreement include help in managing, training activities and in consolidating the Institute.

establishment of the Institute. There will be advice on problems related to the participation of trainees.

Also to be considered are problems related to the future status of the Institute. In particular, issues to be resolved are the provision of general maritime training and how to secure the necessary continuing financial support.

The FAO officer responsible for helping to achieve these objectives will be a senior adviser/master fisherman who will be assigned to the Institute for a year. Two fellowships will be awarded to local skippers to enable them to obtain master fisherman certificates, since staff with qualifications at this level are essential for the Institute.



Workers in an Ecuador shrimp plant prepare a catch for processing. Shrimping is an important part of the industrial-scale fisheries in Ecuador. Picture by FAO.

# Advanced course in fishing craft design

TWENTY participants from Asian countries were expected to attend a training course in fishing boat design which FAO is holding in Bangkok, Thailand, from September 18 to December 9. The course is being financed by NORAD, the Norwegian International Aid Agency, with the government of Thailand as the host.

The participants come from India, Pakistan, Sri Lanka, The Philippines, Burma, Indonesia, Hong Kong and, of course, Thailand.

## Graduates

Basically, they are mostly naval architects who so far have had no or only limited experience in designing fishing vessels. But they also include graduates in engineering disciplines who wish to become fishing boat designers and boat builders.

In general, lectures are being given in the morning and practical work is done in the afternoon.

Main lectures at the training centre are by FAO staff (John Fyson, D. J. Eyles and O. Gulbranson) supported by a number of specialist consultant lecturers. The centre is located in the Rajasubhamitra Hotel, Bangkok.

FAO is planning to hold a similar training centre in Latin America in 1979.

# School plan aids Ecuador

THE School of Fisheries in Manta, Ecuador, continues to move ahead with its ambitious training programme. This forms part of Ecuador's strategy to make the best possible use of her aquatic resources.

Described in *FNI* in May 1977, the centre in Manta cost nearly US\$1 million to plan, build and equip. It was funded by a World Bank loan within a four-part programme for fishing development.

The first 90 trainees graduated from the School at the end of 1976 and the plan was to increase the number of trainees to about 240 a year.

Engineer Manuel Bayas, Administrative Director of the School (which is within the Ministry of Natural Energy and Resources) told *FNI* correspondent Kenneth Proudfoot that all courses for this year are being completed. During August, September and October, two courses are being provided for sea fishermen and machinists.

The training programme for Ecuador has the following aims:

- To train people capable of handling the work of fish capture, processing and resource conservation.

- Prepare people to respond to the need for technical development of new systems, gear and fishing equipment.

- Increase educational opportunities to assist exploration of Ecuador's sea resources.

- Carry out practical exercises in fishing aboard the School's training vessel.

Shrimping is one section of Ecuador's fishing industry constantly in need of skilled people to operate its expanding fleet. Early in 1978, a shortage of skilled manpower prompted one company to hire several experienced fishermen and skippers from Chile.

In addition to working the shrimp trawlers, the Chileans are teaching the Ecuadorians to handle the modern fishing gear. So far, this experiment with Chileans in the boats has been a success. Now, other companies are looking for skilled men in Chile as well as in neighbouring Peru.

About 90 per cent of Ecuador's shrimp companies are located in the Guayas province (capital city is Guayaquil).

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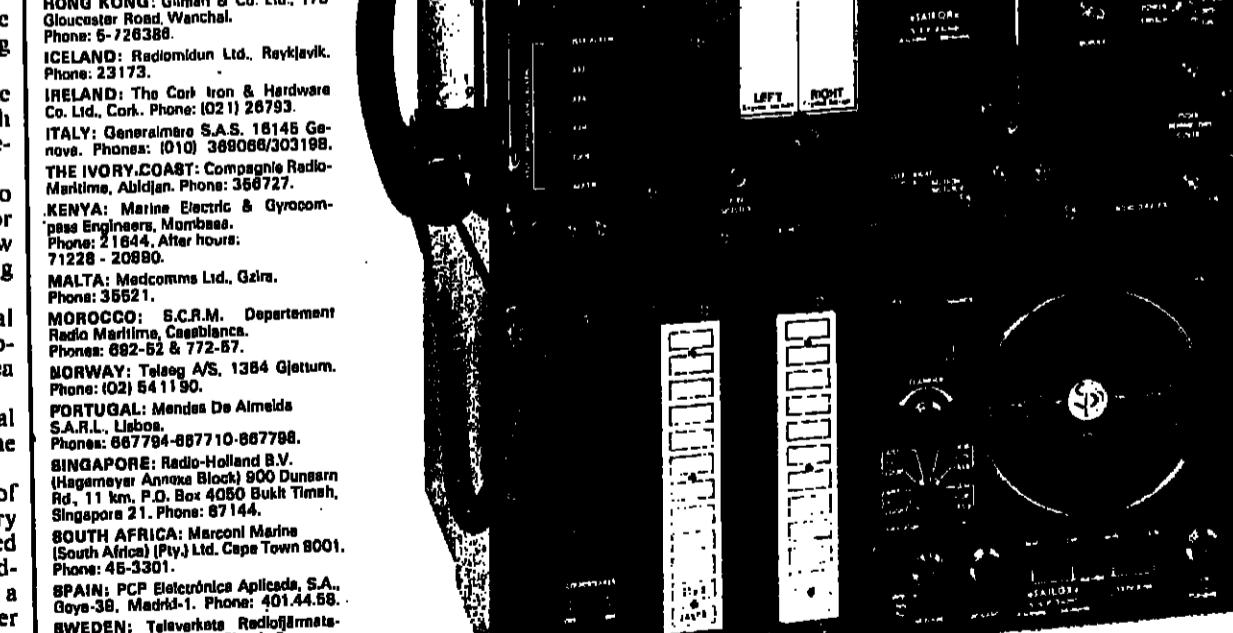
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## POR TS & MARKETS

**Big trawler company is to leave Grimsby**

A LEADING British fishing company is to cease trawling operations in the Humber port of Grimsby from the end of 1978.

Boston Deep Sea Fisheries Ltd. has had ships operating from Grimsby for some 50 years. It says it is now forced to move out because of "greatly reduced fishing opportunities on traditional distant water grounds."

During this year, said Boston, trips by the company's Grimsby-based vessels had proved to be totally uneconomic in both distant and home waters.

It added that deteriorating catch rates from the north Norwegian grounds and poor returns from home water voyages had caused operating losses that could not be allowed to continue without endangering the future of the rest of the company.

In 1976 Boston had a fleet of eleven trawlers working out of Grimsby, all of them side fishers with the exception of the *Boston Halifax* which is the only wet fish stern trawler operating from the port.

Three of these eleven vessels have already been scrapped, four are laid-up and only four are still operating. Of the four, one has been converted for oil rig stand-by duties and a further two will be converted during the next six months.

The *Boston Halifax* is to be transferred to Fleetwood. There, she will continue fishing in home waters, single boat trawling in the winter and probably pair trawling with her sister ship *Boston Stirling* in the summer.

Although Boston is moving its own trawler fleet out of Grimsby, the company main-

tains an agency office in the port. This will continue to handle foreign landings and, possibly, landings by Boston ships from other ports.

**MOVING AWAY:** The wet fish stern trawler *Boston Halifax* will go from Grimsby to Fleetwood.

**OUT:** Three Boston Group distant water side trawlers laid-up at Grimsby.

**UP:** The wet fish stern trawler *Boston Halifax* will go from Grimsby to Fleetwood.

**Philippines firm buys two tuna seiners**

SARMIENTO ENTERPRISES, one of the largest and most widely diversified companies in the Philippines, has paid the equivalent of nearly US\$1.1 million for three floating cold stores bought from the Philippine Packing Corporation. It is now negotiating to buy two tuna purse seiners for about \$1.2 to \$1.7 million each.

Sarmiento has formed a new company called Fortuna Corporation to run the venture which will probably be in partnership with two American-based companies.

Acquisition of the two purse seiners would double the catch in the first year and treble it in the second year, said Ben Sarmiento, head of the fishing project.

Philippine Packing Corporation ran a fish cannery operation but moved out because it could not get enough fish to store or process.

The reason for this is that the company was a wholly-owned foreign subsidiary of Del Monte Corporation in the United States. Catching fish in the Philippines is now restricted to companies whose shares are at least 70 per cent owned by local interests.

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## LATEST BRITISH DRIFT IS AS COD

FURTHER indication of the change in the make-up of the British fish catch has come with the latest statistics compiled by the Ministry of Agriculture, Fisheries and Food and the

Economics Research Unit (FERU) of the White Fish Authority.

These reveal the full extent of the replacement of cod by mackerel as the dominant species in the catch, if not yet in actual landings at UK ports.

The MAFF figures for the first half of 1978, show that the total for Britain fell slightly in volume, from 448,908 metric tons to 443,274 tons, but that the total value moved up from £118.73 million to £119.38 m.

In England and Wales, cod landings fell from an already low 54,840 tons (valued at £26.86 m.) to 40,349 tons (£20.77 m.). The total for all demersal fish fell from 128,558 to 101,080 tons.

### Jumped

But the English and Welsh total for pelagic fish jumped from 109,506 to 153,399 tons, due almost entirely to the big increase in the mackerel catch. For England and Wales in January-June, 1978, this rose to a record 111,160 tons, compared with 64,225 tons. And the ex-vehicle value increased from £42.2 m. to £10.9 m.

Looking at British fish supplied over the first three months of 1978, the FERU Supplies Bulletin notes that domestic landings of demersal

## CATCH FIGURES SHOW...

## TO THE MACKEREL FALLS FURTHER

fish fell by about 25 per cent to 88,984 tons. In England and Wales, supplies were 40 per cent down with catches by distant water ships (including

freezer and factory vessels) falling by 78 per cent.

In the same three months, imports of demersal food fish rose by 62 per cent to 56,558

tons and represented nearly 40 per cent of UK supplies.

Comparing the year ended March, 1978, with the previous 12 months, FERU found that UK landings of demersal food fish were almost 100,000 tons or 19 per cent down. Imports over the same period rose by 29 per cent to more than 200,000 tons.

Looking at exports in the first quarter of 1978, FERU found a remarkable jump of 139 per cent. But 90 per cent of this was due to a rise in exports of frozen fish which, in turn, depended on the enlargement of the market for mackerel.

This was a period of fishing and trading off the south-west coast of England. And there was an increase of 77 per cent in the export of frozen mackerel. This fish, fresh and frozen, made up 77 per cent of the total exports of white fish.

While the most spectacular development in the fishery for mackerel has been the purchase at sea by Eastern

European factory ships from British purse seiners and stern trawlers, this only accounted for a small share of the export trade.

### Big importer

Nigeria was the biggest importer of British-caught mackerel. In the first quarter of 1978, she took 21,502 tons valued at £3,686,000; in January-March, 1977, she took 2,884 tons.

Among other big buyers of mackerel, imports by Bulgaria rose from nothing in January-March, 1977, to 12,187 tons, by the USSR from nothing to 16,979 tons, and East Germany from nothing to 6,770 tons.

With mackerel making up almost all the fish in these frozen imports, it is interesting to compare prices per ton. Nigeria's imports averaged £171 a ton. The Bulgarian factory ships appear to have paid about £165 a ton and the Russian ships about £133.

## A Spanish-Irish hake project

THE long-delayed Castletownbere fish factory project in West Cork, Ireland, is to go ahead, with financial assistance from the Irish Government.

Announcing this last month, Minister of Fisheries, Brian Lenihan, and Chief Executive of the Irish Sea Fisheries Board, Brendan O'Kelly, said major plans for the development of the country's fishing industry were being considered by the government. The emphasis will be on training facilities and on encouraging fishing for underused species, such as hake and blue whiting.

The Castletownbere project is a joint venture involving the Vigo-based Spanish company Pescanova. The promised factory is to cost about £2 million and will be supplied by Irish and Spanish trawlers.

The Fisheries Board is also believed to be trying to get a similar plant set up in Killybegs in County Donegal on the north-west coast. And it has been discussing other plants with Swedish and Norwegian processors.

Spanish vessels have worked off Ireland fishing hake for many years but the EEC 200-mile limit and other controls have pushed them off Porcupine Bank, one of the best hake areas.

Pescanova is to register three trawlers in Ireland to comply with EEC regulations. It will also buy hake from Irish vessels.

## A TOP PORT FOR TUNA...

THE West African port of Abidjan in the Ivory Coast has developed into one of the world's major tuna centres. It is now handling about 70,000 tons of tuna a year from catches landed mainly by locally-owned purse seiners and by French and Spanish ships.

Most of the landings are exported as raw frozen tuna to canneries in France. But this is expected to change with the further development of Ivory Coast canning plants.

The Scodi Company is to expand its capacity from 90 tons a day to 110 tons. Another factory is due to start up this month and will produce 60 tons.

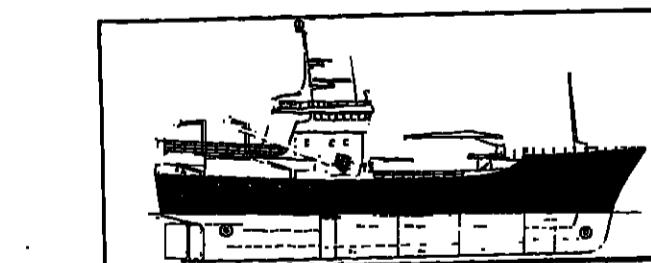
By 1980, tuna fishing and processing should be providing employment for 2,000 people in the Ivory Coast.

**KIPSTEKNISK A.S.**

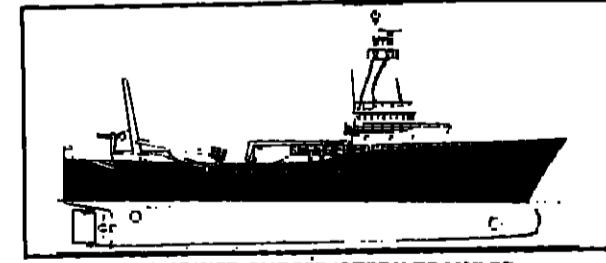
CONSULTING NAVAL ARCHITECTS AND MARINE ENGINEERS

**Norwegian designed fishing vessels**

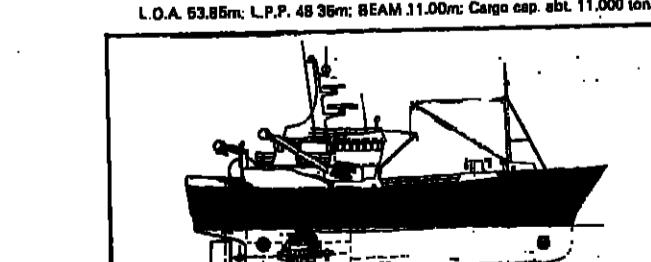
These are examples of some of our projects



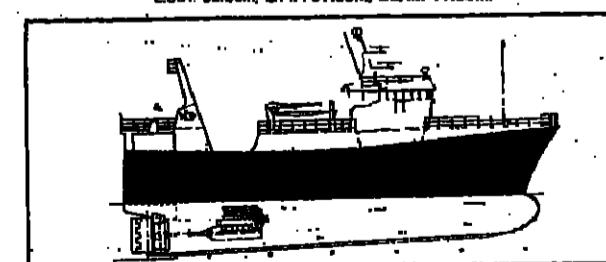
COMBINED PURSER/TRAULER  
L.O.A. 53.85m; L.P.P. 48.36m; BEAM 11.00m; Cargo cap. abt. 11,000 tons



COMBINED PURSER/STERN TRAWLER  
L.O.A. 55.00m; L.P.P. 51.05m; BEAM 11.00m



COMBINED PURSER/TRAULER  
L.O.A. 40.10m; L.P.P. 33.58m; BEAM 9.20m; Cargo cap. abt. 550 tons



COMBINED STERN TRAWLER/LONGLINER-GILLNETTER  
L.O.A. 35.05m; L.P.P. 31.20m; BEAM 9.00m; Cargo hold abt. 700 tons

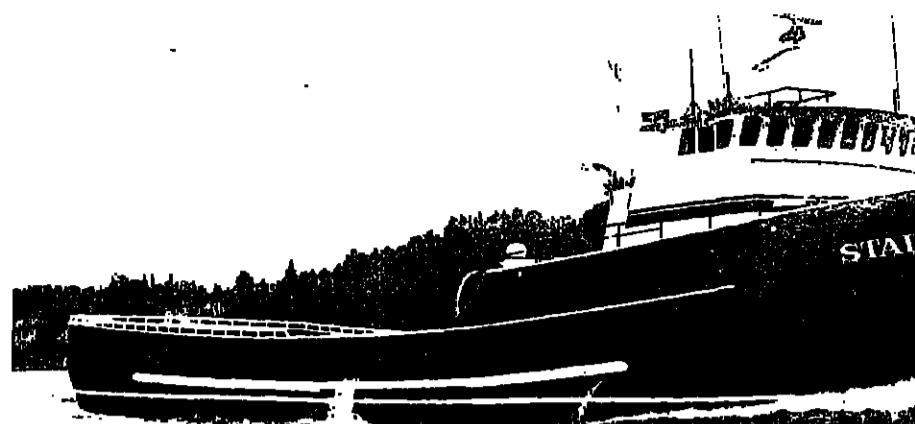
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Please phone or visit us. We would be pleased to discuss your exact requirements.

**BOATS & BUILDERS**

## CHANGES IN THE 'STARLITE'

THE SECOND of the new series of 122ft. combination vessels built in Seattle, USA, by Marine Construction and Design Co. (MARCO), has

made a start in the Alaska King Crab season which began last month.

Named the *Starlite*, the vessel is equipped with fishing stations port and starboard, so that pots and pot lines can be handled with a minimum of manoeuvring.

Deck machinery includes two Marco "KingHaulers," two Marco "KingCoffers" and two Marco single-action crab pot hydraulic dumping racks. An 11-ton Rowe telescopic crane is used for positioning the pots on deck.

With three fish holds totalling 9,500 cu. ft., the *Starlite* can carry up to 220,000 lb. of live crab.

Propulsion is by a Caterpillar D399 turbocharged, after-cooled diesel of 1125 bhp, coupled to a Caterpillar 7261 hydraulic reverse reduction gear and turning a Coolidge 86-inch, three-blade, stainless steel propeller.

Auxiliary engines comprise a Caterpillar 3304 TA (turbo charged for a 55 kW generator) and two larger Caterpillar 3306 TA auxiliaries coupled to two 155 kW generators.

The *Starlite* features a number of design changes from the traditional Marco crabber: A single box mast encloses the exhaust pipes, the pilothouse has been stepped up half a deck for 360-degree visibility; and galley and mess areas are reversed so that the mess now faces the afterdeck.

Navigation and communication equipment includes two Loran, two radars, recording depth sounder, depth indicator, autopilot, gyrocompass, two sub radios, and a radio telephone.

The prototype of the series, the *Arctic Sea*, was described in last month's issue of *FNL*.

## Look into Cat Power the 3400 Series

free fuel systems, quick change fuel, oil and air filters. And for easy access, a choice of starter and dipstick positions.

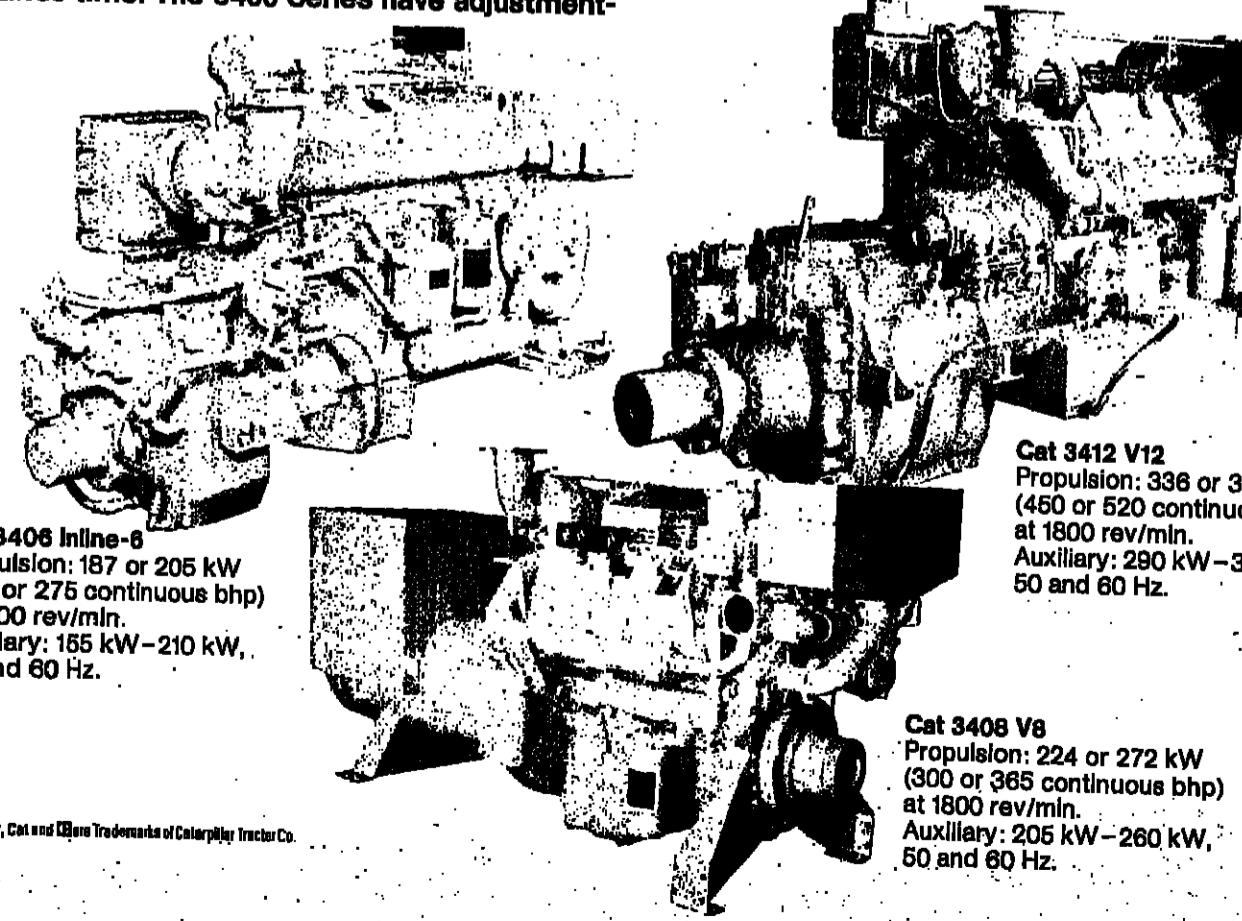
And more — the 3400 series are backed by Caterpillar dealer support services. Ask your local Cat dealer for our worldwide Marine Service Directory.

**CATERPILLAR**

Inline-6, V8 and V12 models offer a choice of six propulsion and six auxiliary ratings. All available with matching marine transmissions or generators — from one source. Caterpillar.

The 3400s are designed to fit easily into smaller engine rooms. Even the 3408 and 3412 models with narrow 65° Vee can be installed in the space once restricted to inline engines. Leaves more room for extra cargo or fuel.

Simple design means less service and maintenance time. The 3400 Series have adjustment-



**Cat 3400 Inline-6**  
Propulsion: 187 or 205 kW (250 or 275 continuous bhp) at 1800 rev/min.  
Auxiliary: 165 kW-210 kW, 50 and 60 Hz.

Caterpillar, Cat and CB are trademarks of Caterpillar Tractor Co.

**Cat 3412 V12**  
Propulsion: 336 or 388 kW (450 or 520 continuous bhp) at 1800 rev/min.  
Auxiliary: 290 kW-395 kW, 50 and 60 Hz.

**Cat 3408 V8**  
Propulsion: 224 or 272 kW (300 or 365 continuous bhp) at 1800 rev/min.  
Auxiliary: 205 kW-280 kW, 50 and 60 Hz.

EN 7087

## Versatile alloy seiner

A NEW aluminium hull longliner and drum purse seiner has been delivered to Fredelia Fishing, a co-operative in Prince Rupert, British Columbia.

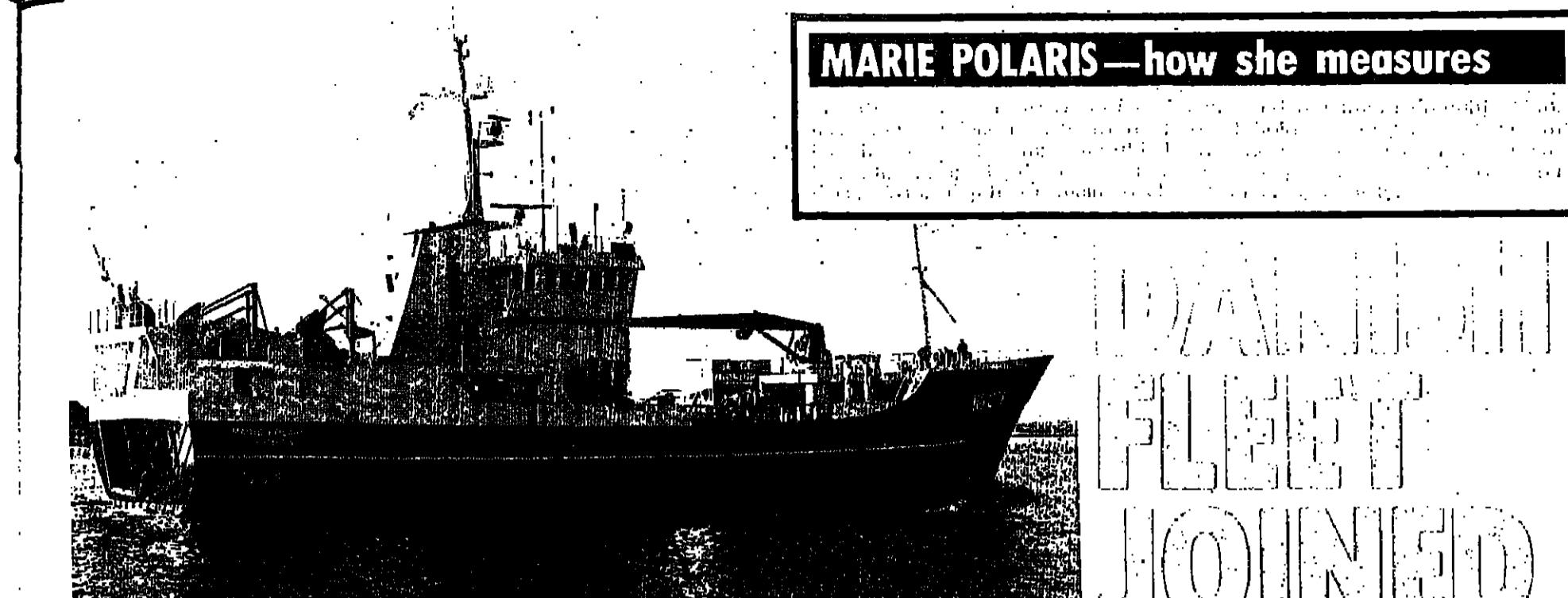
The 19.8 metre long *Pursuit* was built by Shore Boat Builders of Richmond, B.C.

Skipped by Peter Wallin, she will work as a drum seiner in the salmon and herring fisheries. She will also long line for halibut.

The boat was designed by naval architect David Moore. She has a beam of 3.86 metres and a depth of 2.75 m.

Propulsion is by a Cummins KT1150 engine of 450 hp at 2100 rpm, turning a fixed-pitch propeller through a 4.5:1 Twin Disc Omega gear.

Her fish carrying space is divided into four compartments, able to take 90 tons of herring. It is cooled by an air-bubble refrigeration system.



## MARIE POLARIS — how she measures

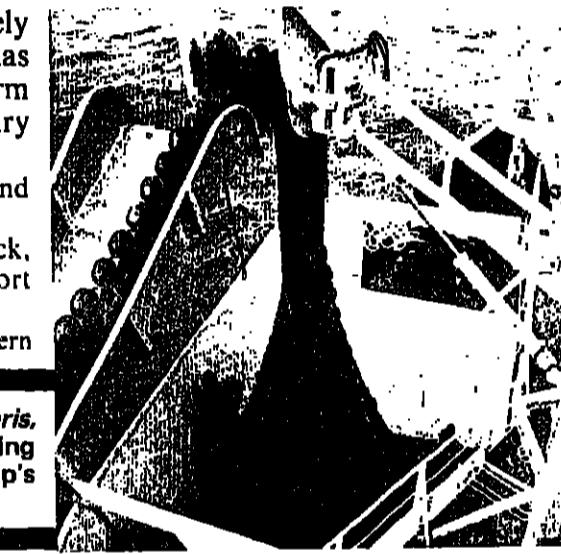
BY BOB TRAWLER PURSER

ONE OF the largest and most comprehensively equipped fishing vessels to join the Danish fleet has been delivered by Aalborg Værft A/S to the firm Marie Polaris II, which is represented by Henry Espersen, a fish exporter of Hirtshals.

The *Marie Polaris* is a combination purse seiner and trawler.

She has main and shelter decks, long forecastle deck, raised stem and stern and stern ramp offset to the port side.

She complies with Det Norske Veritas class +1A1 'Stern



Aboard the *Marie Polaris*, showing the purse net being run out over one of the ship's two transport rollers

was supplied by Thomas Th. Sabroe A/S. It is an automatic plant arranged for the cooling of seawater which is circulated to the ship's eight RSW tanks.

### Freshwater

An Atlas plant provides three tons of freshwater every 24 hours.

Deck equipment consists of hydraulic winches and cranes.

The purse seine winch, by Karmøy, has a capacity for 1500 metres of 25 mm wire on each drum and has a pull of 25 tons.

The trawl winches aft are also made by Karmøy. Each takes 1500 m of 25 mm wire. A Karmøy net drum on the boat deck aft has a capacity for 14 cu m and pull of 25 tons.

Steering is by Frydenbo hydraulic gear, and the ship is equipped with Sperry gyro compass and Decca-Arcas autopilot.

The refrigeration system

two deck cranes by Maritime Hydraulics — one of 3.5 tons capacity with 13 m radius and one of two tons with 6 m radius.

Arrangement of instrument and control consoles in the wheelhouse were planned in co-operation with the vessel's skipper.

Navigational aids include Decca RM 914C and RM 929C radars, Simrad radio direction finder and doppler log type NL, ICR satellite navigator, and Raytheon weather chart receiver.

### Fish finders

For fish finding, the ship carries Simrad SU sonar, Trawl-Eye, EQ38 and EX50C echo sounders, and Simrad Trawl Watch.

The ship has a Bjørshol Triplex net winch, a net sounder winch, two transport rollers, fish pump and anchor and mooring winches.

She is also equipped with

two diesel generators. The NEBB shaft generator of 1250 kVA is directly coupled to the front of the main engine. The auxiliary machinery consists of two 300 hp Cummins engines each coupled to a 250 kVA generator. The main

switchboard is by Thriges-Titan.

Steering is by Frydenbo hydraulic gear, and the ship is equipped with Sperry gyro compass and Decca-Arcas autopilot.

The refrigeration system

propulsion is by a six-cylinder four-stroke MaK type 6M 453K diesel of 2250 bhp at 600 rpm. This turns a controllable pitch propeller through Ulstein reduction gear. The propeller is in a fixed nozzle.

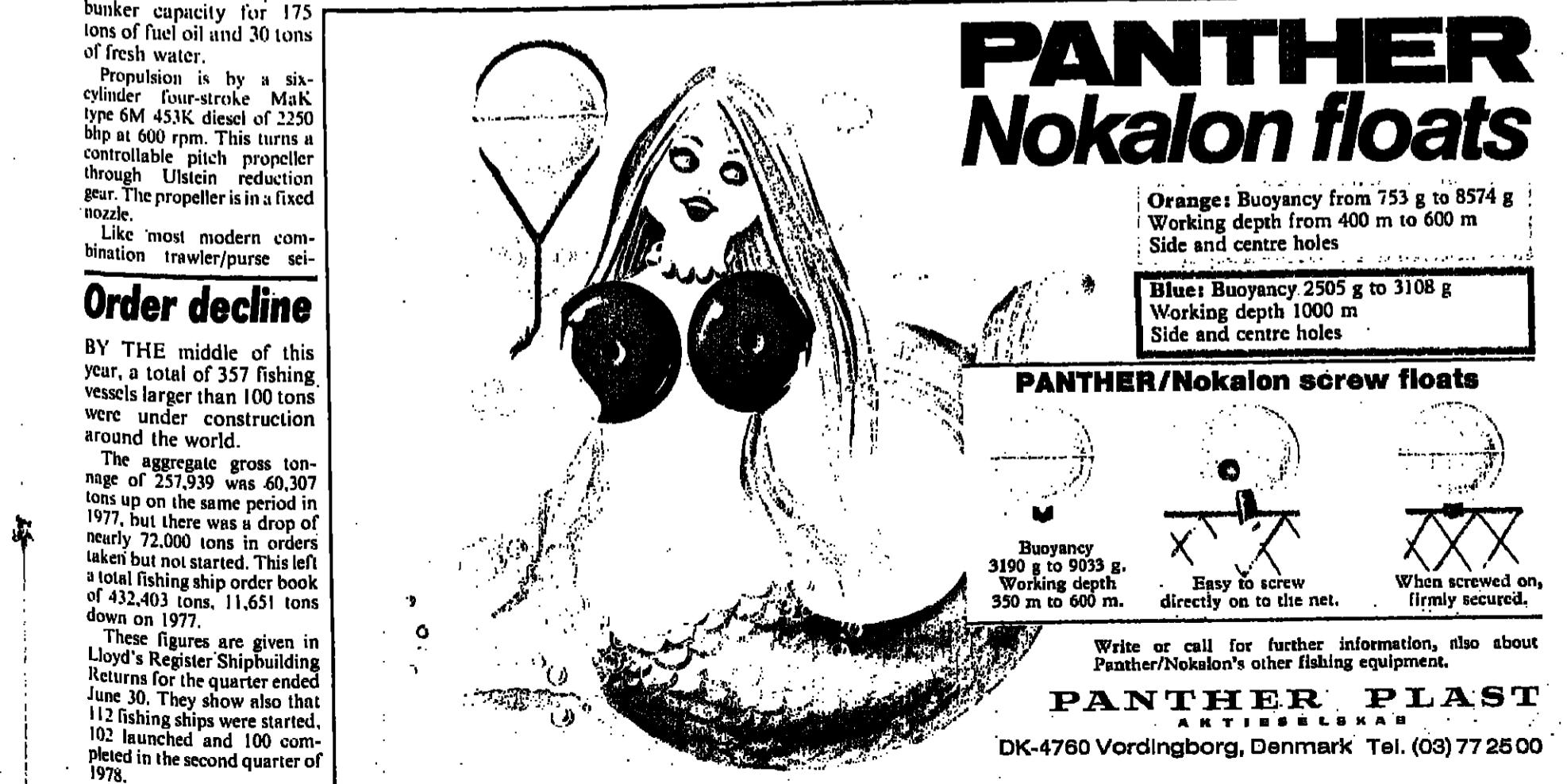
Like most modern combination trawler/purse sei-

## Order decline

BY THE middle of this year, a total of 357 fishing vessels larger than 100 tons were under construction around the world.

The aggregate gross tonnage of 257,939 was 60,307 tons up on the same period in 1977, but there was a drop of nearly 72,000 tons in orders taken but not started. This left a total fishing ship order book of 432,403 tons, 11,651 tons down on 1977.

These figures are given in Lloyd's Register Shipbuilding Returns for the quarter ended June 30. They show also that 112 fishing ships were started, 102 launched and 100 completed in the second quarter of 1978.

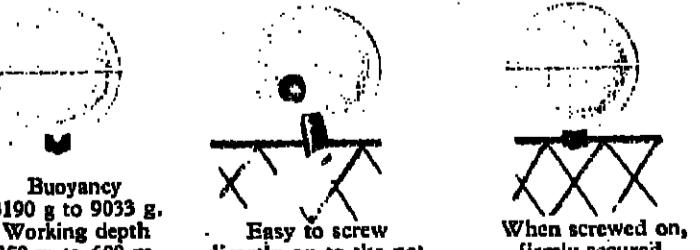


## PANTHER Nokalon floats

Orange: Buoyancy from 753 g to 8574 g  
Working depth from 400 m to 600 m  
Side and centre holes

Blue: Buoyancy 2505 g to 3108 g  
Working depth 1000 m  
Side and centre holes

### PANTHER/Nokalon screw floats

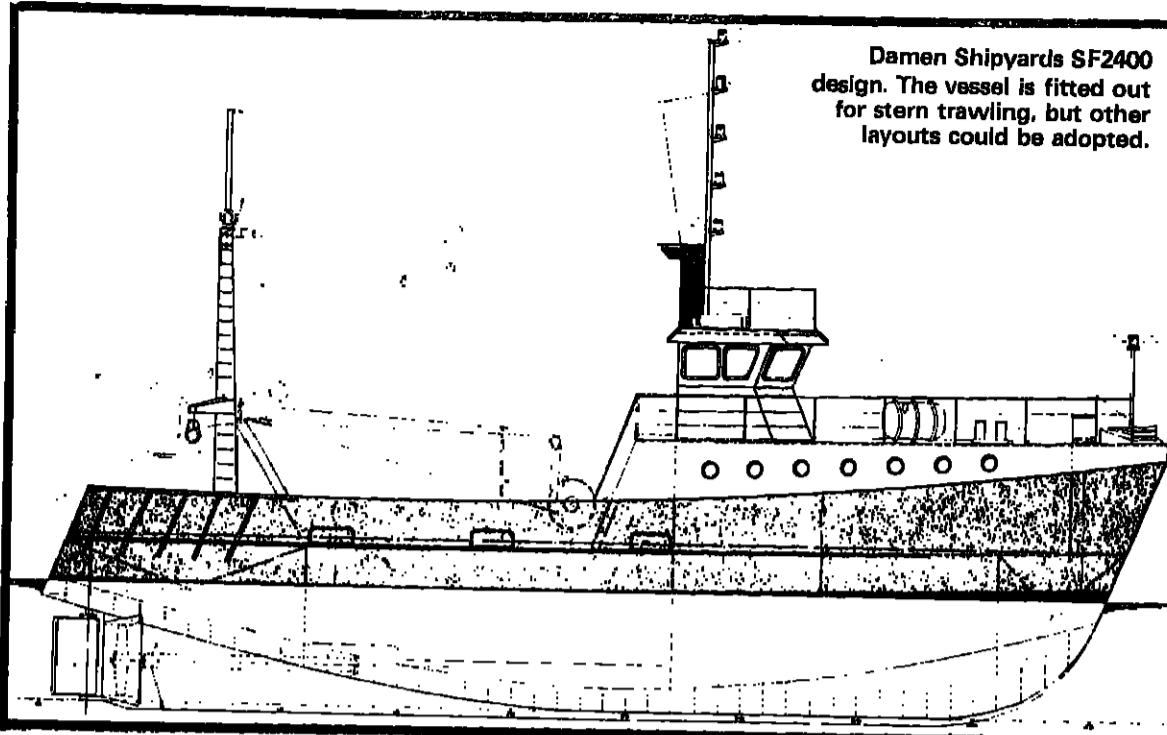


Buoyancy 3190 g to 9033 g  
Working depth 350 m to 600 m.  
Easy to screw directly on to the net.  
When screwed on, firmly secured.

Write or call for further information, also about Panther/Nokalon's other fishing equipment.

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## BOATS &amp; BUILDERS



# SERIES BUILT FOR A VARIETY OF NEEDS

## Dutch yard has designs to offer

COMING IN on the demand for economically-priced standard steel fishing vessels, Damen Shipyards at Gorinchem in Holland are developing a range of series-built hulls from 16 to 40 metres long (52 to 131 ft.).

Depending on size, the vessels can be fitted out as stern trawlers, shrimp trawlers, beam trawlers, purse seiners or combination seiner-trawlers.

The 'Stan Fisher' range includes 10 designs, the largest of which — for a 40-metre long stern trawler purse seiner — is still under development.

The other hulls graduate from 16 metres to 22 metres, 24 metres and 32 metres.

Damen claim that their vessels are efficient, high-earning units designed to suit a wide variety of uses and fishing waters.

The 'Stan Fisher' 2400, for example, meets all IMCO requirements and is, according to

### Dimensions

Damen, "very suitable for operations within 200-mile fishing zones."

The hull can be fitted out for stern trawling, beam trawling, purse seiners or a combination of all three.

### Overall length is 24 metres with a moulded breadth of 7.0 m., depth of 3.4 m. and draught amidships of 1.96 m.

The fish hold has a capacity of 110 cu m and there are bunkers for 28 tonnes of fuel and 11 tonnes of fresh water.

Propulsion engines between 350 and 670 hp are recommended for the vessel which will give a free running speed of between 8.5 and 9.6 knots. A propeller nozzle can be fitted to increase bollard pull by approximately 15 per cent.

Engine and reduction gear are mounted on reinforced beds to minimise vibration and there is ample space in the engineroom for cooling or refrigeration plant.

Accommodation in the 'Stan Fisher' 2400 comprises private quarters for the skipper along with a twin berth cabin and two four-berth cabins.

Damen's smallest boat, the

'Stan Fisher' 1600, is for the inshore fisherman probably wanting to replace a wooden boat and to fish waters beyond his present range.

The 1600 can be fitted out as a stern trawler, pair

trawler, beamer or purse seiner.

She has a length of 16.0 m, moulded breadth of 5.0 m, depth of 2.3 m and fish hold capacity of 30 cu m.

### Power range

The power range is 184 to 360 hp which gives a bollard pull of between 1.8 and 4.4 tonnes.

Fuel and fresh water tanks

have capacities of 7.5 and 2.5 cu. m and the vessel's full power endurance is four to eight days.

## Reels aft on fly dragger

THE completion in the UK of the 26-metre (85 ft.) *Kestrel* by Campbeltown Shipyards for Skipper Ian Sutherland of Hopeman marks an important development in the Scottish flydragging method of seining. All her gear-handling machinery is located aft of the deckhouse.

This has significant safety advantages as it enables the gear to be worked from the stern. Ropes are kept away from the foredeck where the crew gut and box the fish.

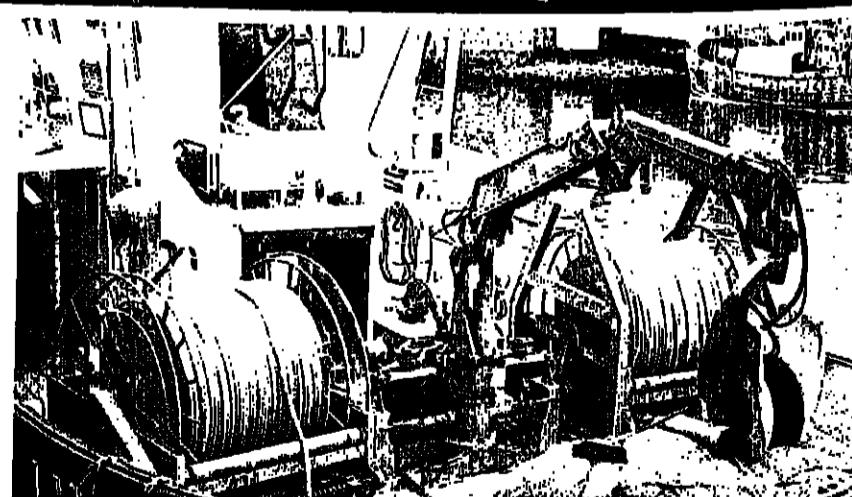
The *Kestrel* has also been fitted with a shelterdeck extending from deckhouse to whalebuck to give the crew extra protection from the weather.

Many local fishermen think that this layout will be adopted by other skippers. They now feel that the after deck is the logical position to house the gear-handling machinery.

*Kestrel* was initially being built as a conventional seiner, with the intention of placing her winch and rope reels in the traditional position forward.

It was during her construction that Skipper Sutherland decided on the new layout.

The deckhouse had to be made shorter to provide more space at the stern.

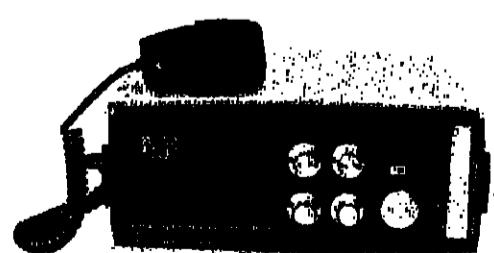


Above: The 'Kestrel's' aft deck showing the Norsk Laursen seine winch, twin Lassie Hydraulic rope reels and Lassie power block.

Left: The new vessel shortly after completion. She is powered by 800 hp Mirrlees Blackstone engine.

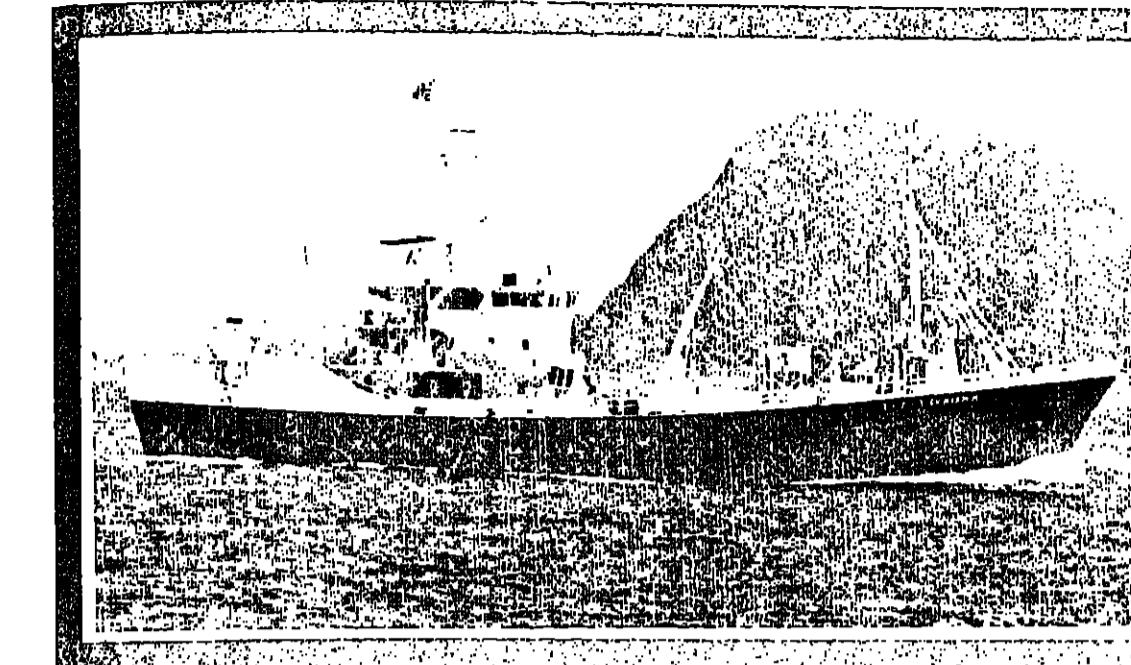
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## WOOD BOATS GET SMALLER SUBSIDY

## Norwegian yard's third seiner-trawler

BUILT by Ulstein Hatlo for A/S Fliskedrift of Tromso, the 62 metre long *Grimsholm* is the yard's third large combination trawler and purse seiner to be delivered in 1978.

She has a length b.p. of 55 metres, a moulded breadth of 11.6 m and depth to shelter deck of 8 m. The ship was designed by Vik and Sandvik.

The 1,200 gross ton *Grimsholm* is powered by an MaK model 9M 453 AK diesel engine developing 3,400 hp at 600 rpm and has a speed of 16 knots. She is fitted with Ulstein 500 hp bow

and stern thrusters and Ulstein passive stabiliser system.

Accommodation is provided for a crew of 19.

Gear handling equipment includes Rapp Hydema main winch and net drum, and Triplex power block.

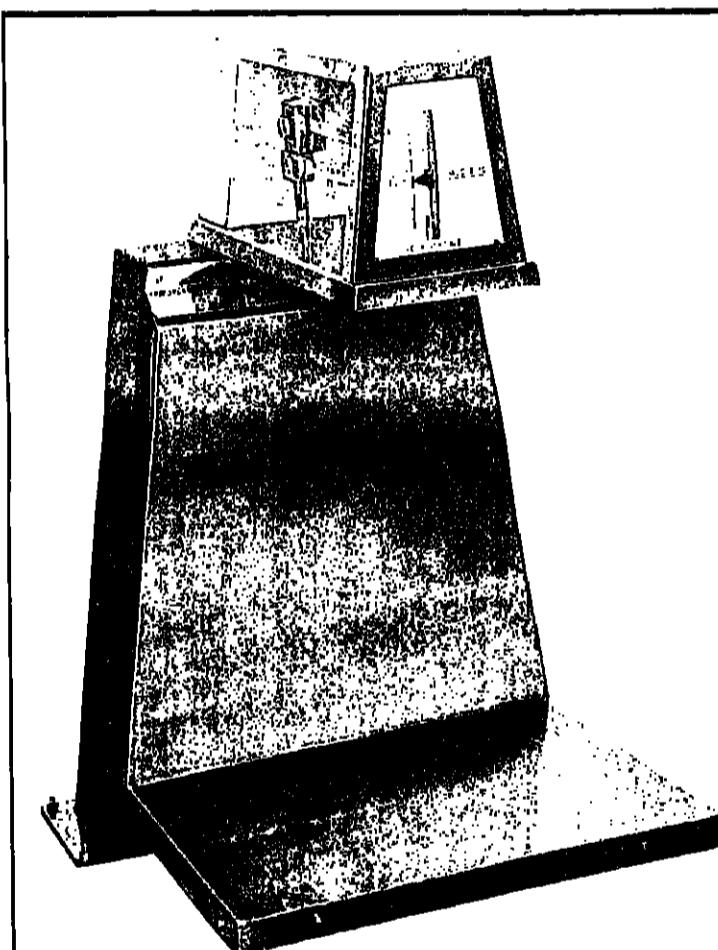
### Simrad sonar

The ship has a comprehensive array of electronic fish finding and navigation equipment. This includes Simrad CD situation display sonar, Simrad echo sounders, and Magnavox satellite navigation system.

## VEGA

### ON BOARD SCALE 6010

### A TOUGH SCALE FOR A TOUGH JOB



### No knives or bearings under the weighing platform

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### Specially designed for use on board trawlers and factory ships

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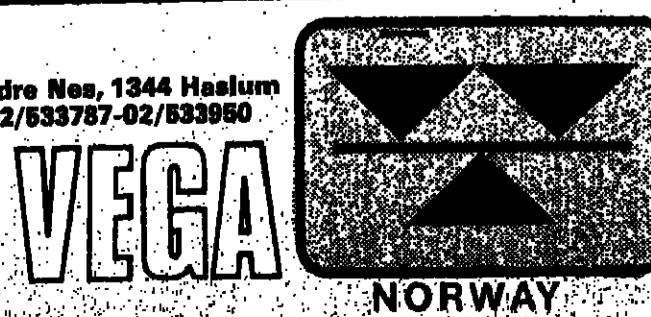
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**VEKTA**

## SPEED AT A BUDGET PRICE

OF INTEREST to developing countries requiring low-cost, high or low-speed boats will be the new "Task Force" Q18 from Boat Showrooms of London.

The Company has already supplied two craft, based on the same hull design, completed to British White Fish Authority specifications.

The new Q18 measures 17 ft. 6 in. long overall, with a 7 ft. beam and 0.75 ft. depth. Her weight is 1,200 lb., less engine.

At a recent demonstration on London's River Thames, a Q18 was put through her paces. She is powered by an 85 hp outboard diesel and is claimed to have a speed of 30 knots.

The demonstration boat (pic-

tured below) has short decks forward and aft of a steering console. The nets are shot over the stern and hauled over a bow roller. It is claimed the boat will plane with half-a-ton aboard.

There are two water drains aft which clear the deck.

The boat demonstrated is expected to be in use all-year-round in UK waters.

For commercial work the outboard can be replaced by an inboard, with a choice of sterndrive or water jets.

Boat Showrooms of London says that the Q18 is built to a heavy specification.

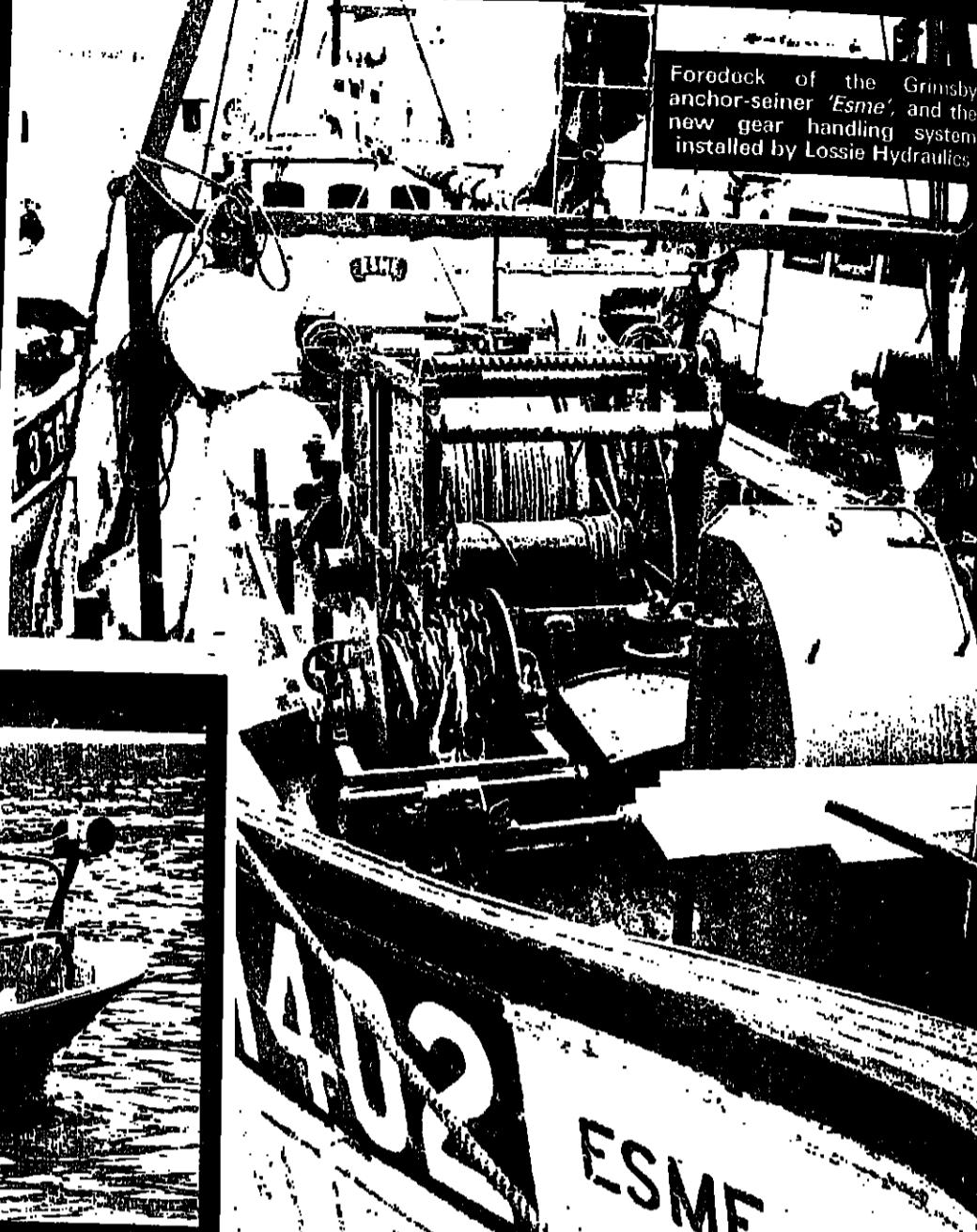
Price of the multi-purpose craft is around £2,000 less engine.

The demonstration boat (pic-



Boat from British port of Grimsby

is first to have 'Lossie' hydraulic reel-winch system...



Foredeck of the Grimsby anchor-seiner 'Esme', and the new gear handling system installed by Lossie Hydraulics

## NEW AID

# TO ANCHOR SEINING

FOUR YEARS ago skipper Jimmy Howard of Grimsby, England, fitted a new lightweight three-drum seine rope storage system made by the Scottish firm Lossie Hydraulics of Falkirk in his anchor-seiner *Bekima*.

It was the first piece of equipment of its kind in a Grimsby boat and it helped prepare the way for other Lossie rope drum installations in British boats, both for fly-dragging and anchor-seining.

Lossie Hydraulics has now achieved another "first" at Grimsby with the introduction of an ingenious new-design hydraulic combined seine winch and rope drum unit.

This is suitable for fly-shooters or anchor-seiners and the prototype has gone into Skipper Howard's 50 ft. (15.24 metre) long seine netter *Esme* as part of a major overhaul and refit.

He was planning a similar installation for the *Bekima* two years ago, but deferred it when he replaced the boat with the *Esme*.

The new unit, as with the original drums in the *Bekima*, has been designed in conjunction with Skipper Howard by Lossie Hydraulics chief, Mr. Jimmy Allan.

Last winter, the *Esme* was re-engined with the supercharged Kelvin TAS6 diesel. Then, after trials, she travelled to Grangemouth for a major "face-lift" on deck.

This work entailed, fabrication and fitting a new steel mainmast, re-fitting the boat's Lossie power block, installation Helmsman 200 Scan-Steering gear, installation of a new Lossie gill net hauler, the combination reel and winch unit and a small hydraulic anchor chain winch.

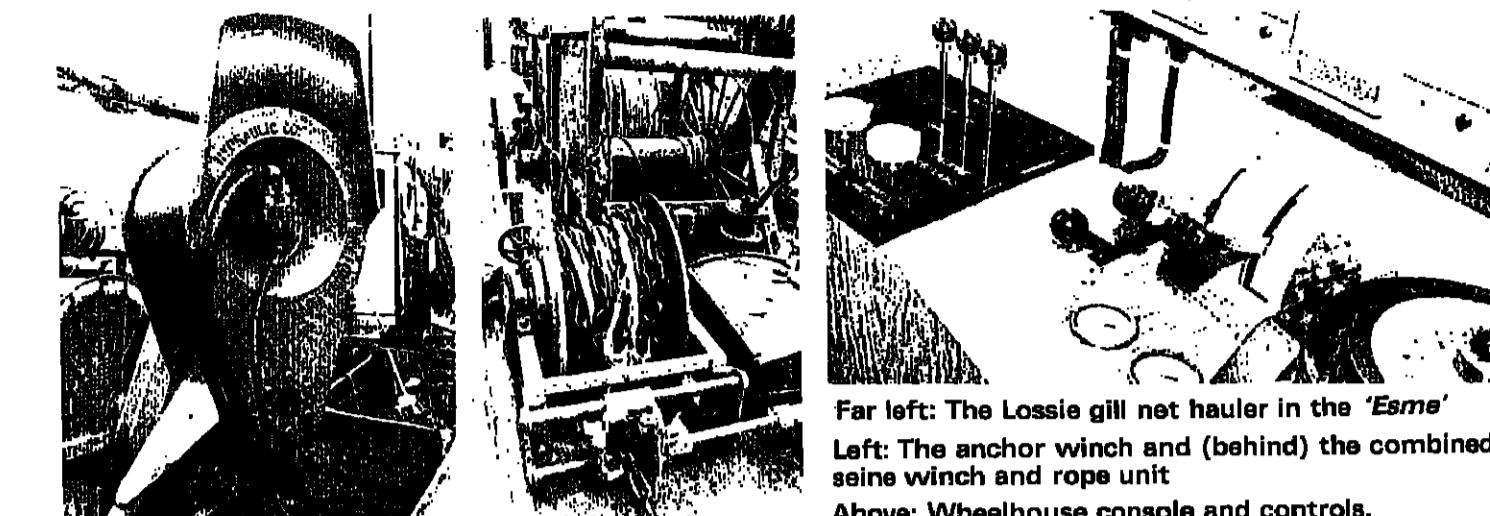
### Custom-built

The winch and reels were in fact displayed at the Catch '78 in Aberdeen, where the unit attracted great interest. It is custom-built to suit all sizes of fishing vessel from 40 ft. upwards.

In the *Esme*, the drums, manufactured from mild steel tubing and weighing approximately 500 lb. (225 kg) each, have been fitted fore and aft amidships in a frame. Located between the drums are two 2.5 ton pull seine winches, or whipping drums.

Both seine winches have independent hydraulic control from the wheelhouse as do the rope drums which have a capacity on each reel for 24 coils of 2½ in. seine rope to allow for turning the 12 coils of ropes off one reel and onto another before shooting or when necessary.

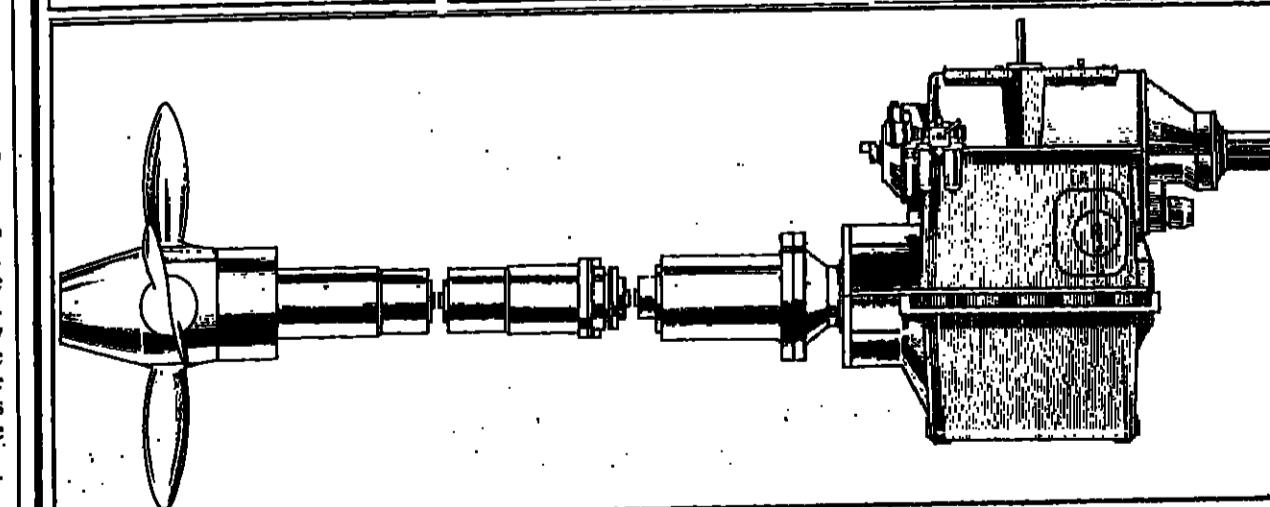
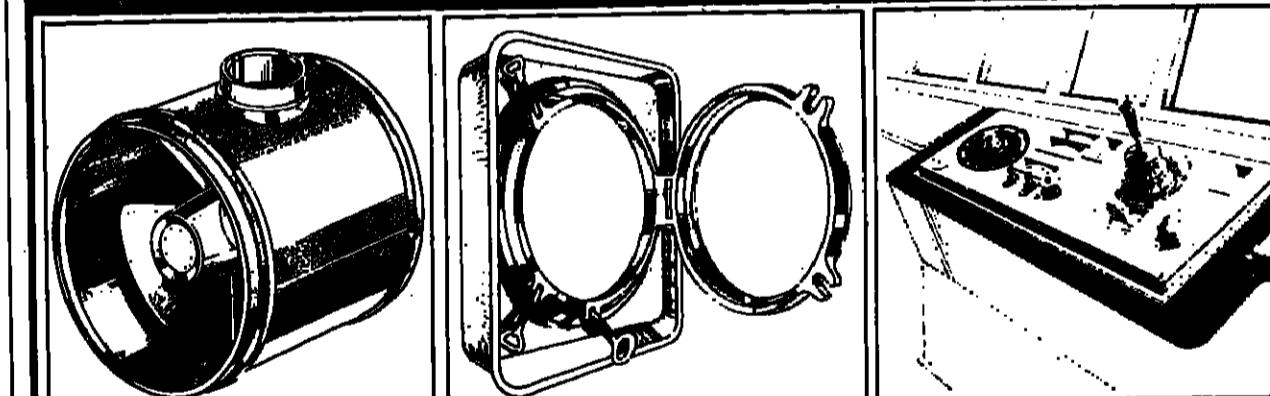
Skipper Howard and the Lossie representatives say they were delighted by the way the system worked during trials. Also aboard was leading seiner skipper David Tait of Peterhead in Scotland, who was also impressed by the performance of the system.



Far left: The Lossie gill net hauler in the 'Esme'  
Left: The anchor winch and (behind) the combined seine winch and rope unit

Above: Wheelhouse console and controls.

# DETAILS THAT COUNT



### TRANSVERSE THRUSTERS

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## MECHANISED LONGLINING...

A 4-page Special Feature

'It's the first time I have ever enjoyed living. When we get into port, we just tie up at the quay and go home. No overhauling tasks like the other lads!'

Skipper Brian Magee, of the San Joseph, commenting on the snood clip system.



# How WFA helped to develop a System for

**TOM WRAY** describes a new mechanised longline system developed and tested by the White Fish Authority in co-operation with British fishermen. Its aim is to enable owners of line boats to work more efficiently and safely without having to spend large sums of money. It is arousing great interest around the British Isles since recent successful trials off the south-west coast of England.

Joining mechanised longline systems from Norway and now from Marco in Seattle, it offers yet another choice for fishermen round the world seeking to take advantage of the growing opportunities for line fishing.

The writer is with the Industrial Development Unit of the White Fish Authority in Hull.

He first gives a brief history of the development of the project. On the following pages, he describes the practical system finally tested and now going into production.

THE NEW British longline system uses clip-on snoods and comprises a line drum, hauler, snood storage "carousel" and shooting tube. It was developed by Falmouth engineer, Ian Frost, and skipper-owner, Brian Magee, in conjunction with the WFA Industrial Development Unit.

It started in a basic form in 1977, when Ian Frost and partner Bob Plant fitted out their 30 ft (9.15 metre) line vessel *Kwester* with a system designed and built by themselves. Featuring a line drum, hauler and clip-on snoods, the system had glassfibre bins with ply partitions for snood storage.

The snoods were dropped into the bins clip first, the hooks being hung over the partitions. Either before or during the voyage out to the grounds, each hook was baited and the complete snood hung by the clip onto a sloping wire. When shooting, the crewman simply took one clip at a time from the wire and snapped it onto the passing longline.

This use of clip-on snoods is no new idea. They have been used successfully off the west coast of America in all types of line fisheries for many years. Following the success of the snood clip system in the *Kwester*, an increasing number of British fishermen started to use the clips.

One of these is Falmouth fisherman Brian Magee, owner of the 28 ft (8.5m) *Patricia II*. Although he liked the basic concept of the system, and considered it a marked improvement over traditional methods, he was not happy

although the number of hooks, and therefore clips, shot on a single drum, was usually very much less than aboard European vessels.

The clips used by the *Kwester* were imported from the Lahr Jensen company of Portland, Oregon, and Ian Frost now holds the agency in the United Kingdom through his company, Transatlantic Fishing Systems.

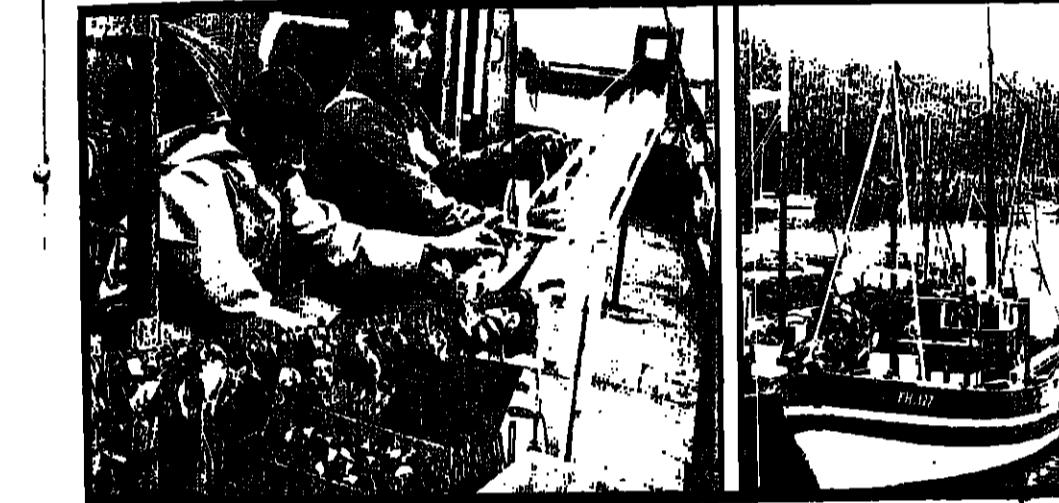
#### Easy to use

Made from heavy-gauge, zinc-plated wire, the clips are available in a number of different sizes, the common ones being type LJ70 (for 7 to 12mm dia. line) and type LJ72 (for 5 to 7mm dia. line). These are shown in the drawing. Very easy to use, they are simply pressed open, entered onto the line and released, the line being gripped tightly between the middle and outer wires.

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# British small boats



Left: Baited hooks go into the shooting of a snood clip system on the *Patricia II*. Centre: The boat deck of the *Patricia II* after being hit by a wave.

with storing the snoods in bins, claiming that these not only take up valuable deck space, but that they are also inconvenient to use.

After devising several different methods, he hit upon the idea of storing the snoods on racks carried in a carousel — a structure which could be rotated to a number of different positions convenient for shooting and hauling. The advantages of using such a storage system would, he considered, probably more than justify the additional cost to most longline fishermen.

After giving the carousel considerable thought, and discussing his proposal with a local firm, Mullion Engineering, skipper Magee asked the WFA Industrial Development Unit for assistance to develop the idea further.

Recognising that the idea had considerable potential, the WFA readily accepted skipper Magee's proposal. It agreed to design and produce detail drawings for a prototype carousel, which would then be manufactured by Mullion Engineering for installation and trials in the *Patricia II*.

Unfortunately, *Patricia II* broke her moorings during strong gales in March 1978 and suffered extensive damage when she was swept onto rocks. But another Falmouth skipper-owner, Joe Lyford, saved the day when he offered his 45 ft (13.7 m) vessel, *San Joseph*, for trials

The installation in the *San Joseph* is described and illustrated on the following pages.

With the trials completed and the system proved, the WFA is producing drawings for a commercial carousel.

This will be based on a standard module which could be built up in a number of ways using different mounting

systems, to provide storage for 2,000, 4,000, 6,000 or 8,000 snoods.

Meanwhile, the prototype continues to attract wide interest, with skippers from all over the country taking time off to visit Falmouth to discuss the system with Brian Magee.

Transatlantic Fishing Systems are continuing to develop large numbers of snood clips and other longline equipment to all parts of the UK and also to several other countries, including Brunei, Denmark, the Faroes, Iceland, Malawi, Norway and Sweden.

Ian Frost is keen both to market the carousel when it becomes available commercially, and in developing the system further — possibly to include automatic baiting and clipping-on of the snoods. He is also considering manufac-

turing the snood clips under licence in the UK.

Further information on the snood clip system and carousel can be obtained from Transatlantic Fishing Systems, 42 Comfort Road, Mylor Bridge, Falmouth, Cornwall, or White Fish Authority, Industrial Development Unit, St. Andrew's Dock, Hull, North Humber.

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Further information on the snood clip system and carousel can be obtained

## MECHANISED LONGLINING... PART TWO

Advantages of the snood clip system

## Successful tests in the San Joseph

THE ARRANGEMENT of the mechanised longline system installed and tested aboard the 45 ft Falmouth boat *San Joseph* is shown in the drawing.

An hydraulically-driven drum, manufactured by Transatlantic Fishing Systems, carries the 6.8 miles (11 km) of line.

The drum, positioned in front of the wheelhouse, is equipped with guiding-on gear. There is also a manually-operated disc brake to slow the drum during shooting and to stop it completely in an emergency.

The drum is coupled hydraulically in series with a Spencer-Carter 1,000 lb pull line hauler at the starboard rail, the line from the hauler being taken up by the drum.

The speed of the drum is faster than that of the hauler so that the drum maintains a tension in the line.

If the hauler is stopped during hauling, the drum simply stalls, thus maintaining the tension in the line. The drum proceeds to take in line again as soon as the hauler is re-started.

## Fairlead

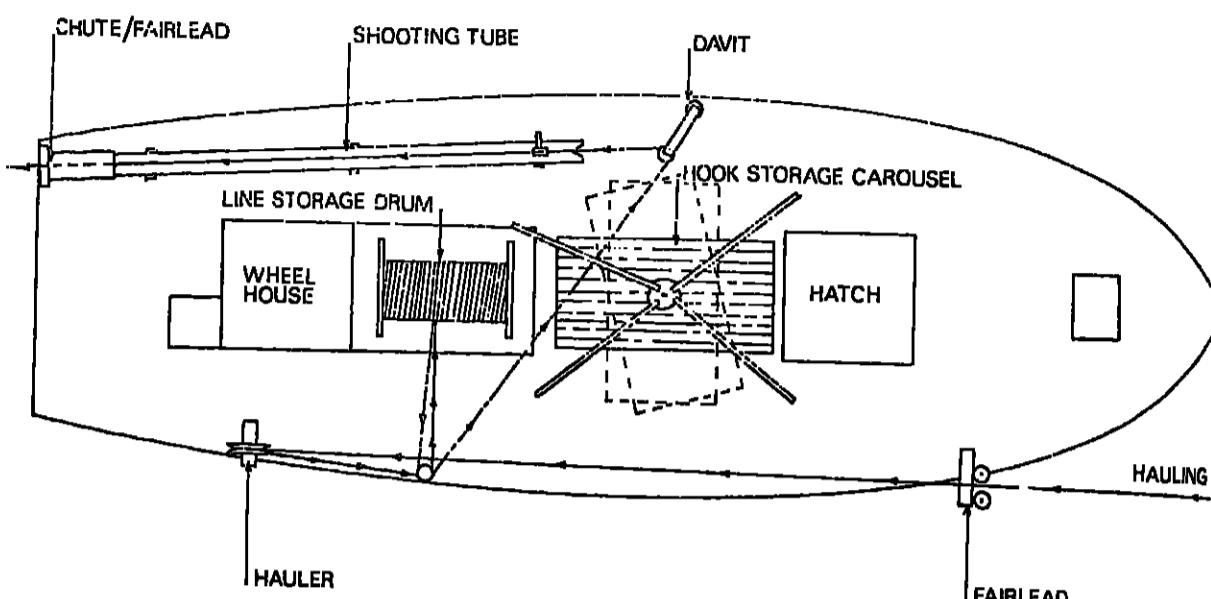
Hauling is carried out over the starboard side, the line to the hauler being first led over a three-roller fairlead mounted well forward. The fairlead, which is positioned over the side of the vessel when in use, can be swung inboard for mooring. From the hauler the line passes around a pulley

block on the starboard rail before going to the drum.

For shooting, the line leads off the drum, around the pulley block opposite, then across to a davit-mounted block on the port side. From there, it passes above the shooting tube and through a fairlead, into the set at the stern.

Installation of the shooting tube was suggested by the WFA after one crewman was hurt in an accident common aboard line vessels; he was hooked through the finger and dragged towards the stern.

The suggestion was to enter the hooks into a slotted tube before clipping the snoods onto the line. In this way, the



This drawing shows the layout of the snood clip system for the mechanised longline trials aboard the *San Joseph*.

hooks are prevented from flicking upwards as the line carries them astern along the haul and into the sea.

In addition to enabling shooting to be carried out with much greater safety, the tube and fairlead prevent the line fouling the stern during manoeuvring.

The line used by the *San Joseph* is 8mm dia. spun nylon Greenfil, supplied by Bridport Gundry. Snoods are

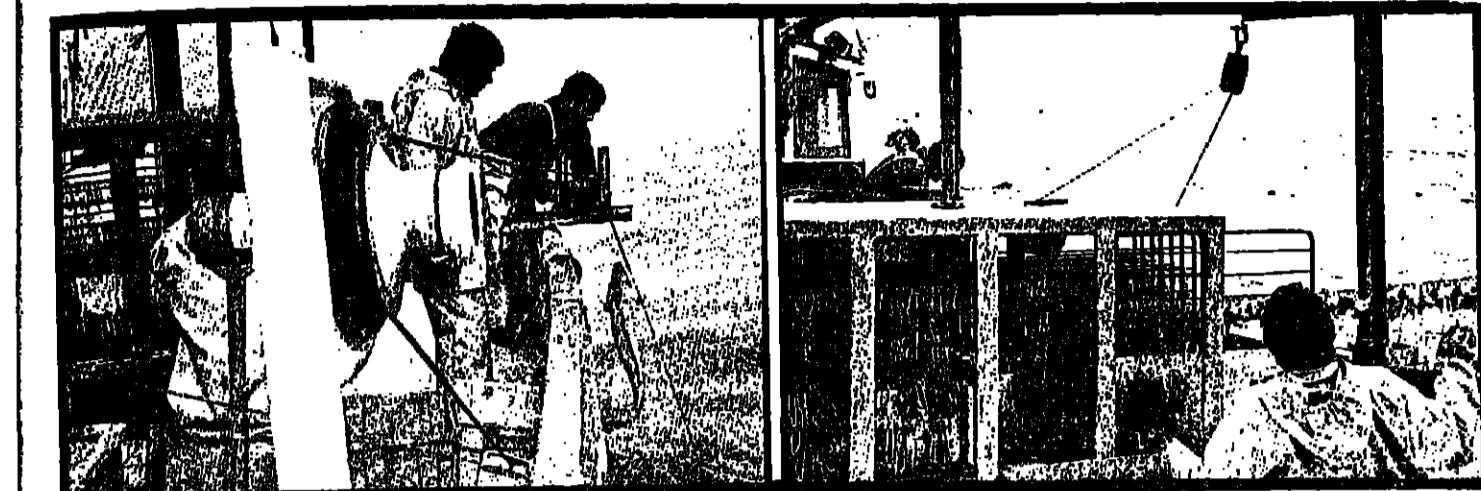
each made up of a Mustad round bent No. 7 hook with swivel, attached to a Luer Jensen LJ70 snood clip by one mm dia. rigid stainless steel wire. The overall length of the snood including the clip, is 305 mm, a total of 4,000 snoods.

Each tack can be extended or, if necessary, removed from the carousel for baiting, shooting and hook replacement when hauling. The racks can be inserted or removed

from either end of the carousel.

Before starting the shooting operation, the carousel is rotated to a position convenient for attaching the snoods to the line.

A buffer store of baited snoods is then built up. This is done by taking several hundred snoods from one of the racks, baiting the hooks with mackerel and placing the hooks over a sloping wire



**Far Left.** Shooting: Crewman Fred Forman takes snoods from one of the carousel racks, baits them and places them on the buffer store wire.

**Left.** Hauling: As hooked fish come up to the forward fairlead, they are unclipped and placed to one side. Snoods without fish are allowed to pass over the fairlead where they are unclipped and replaced on the carousel racks.

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which feeds down to the shooting tube.

Opportunity is also taken at this stage to load the shooting tube with baited hooks ready for clipping onto the line.

After this has been done, the line from the drum is threaded through the various blocks and fairlead to the stern of the vessel. A dahn is then attached to the end of the line and streamed away, the line being drawn off the drum by way of the boat. After sufficient line has been paid away, an anchor is attached and shooting begins.

The advantages of using the snood clip system with carousel are:

1 **Faster Hauling.** Hauling

can be continuous since the fish need not be removed from the hooks during hauling. The snood, complete with fish, is simply unclipped from the line and placed in the deck pound until later.

2 **Reduced turnaround time.** The gear can be baited and shot again immediately after hauling. As mentioned earlier, this cannot be done in traditional lining.

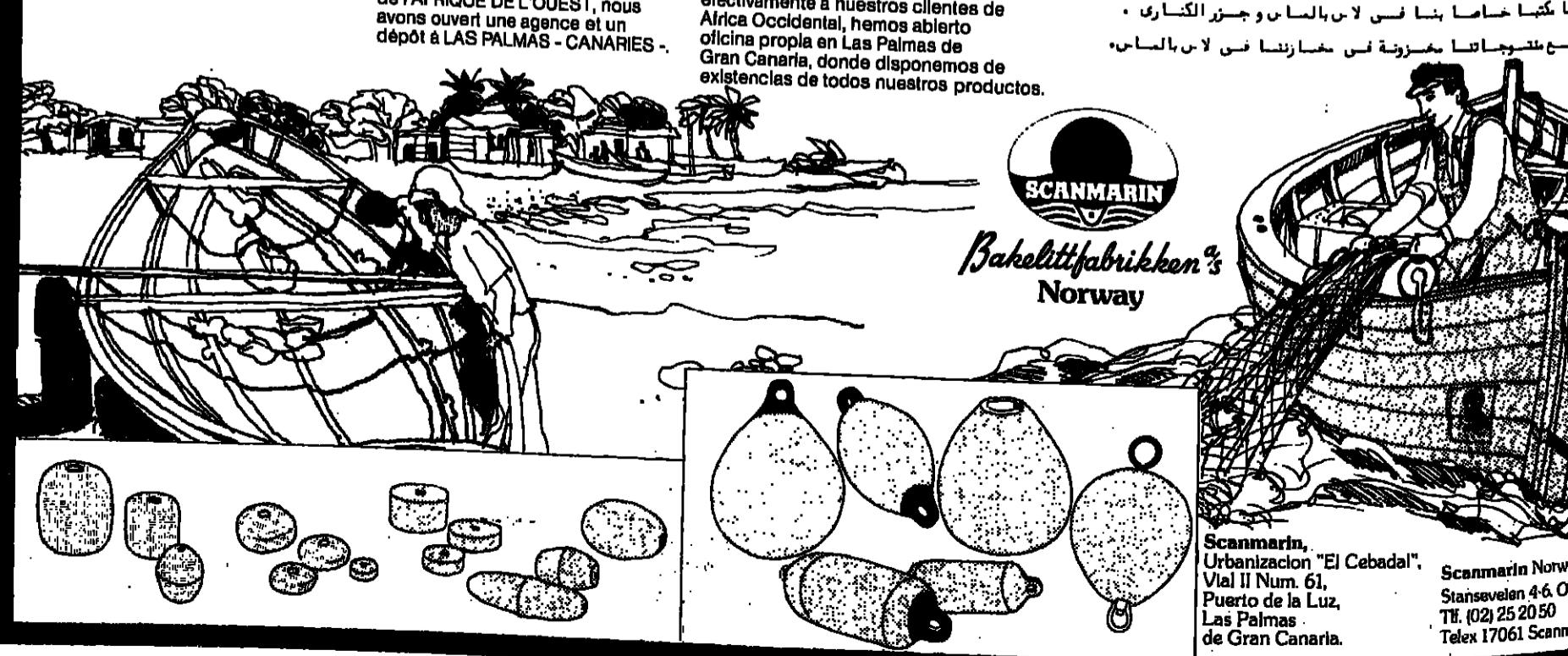
3 **Increased safety during shooting.** Since the snoods are clipped to the line with the hooks enclosed in the shooting tube, there is no risk of a man being snagged by a hook should there be a sudden surge in the line.

4 **Saving in deck space.** Storage of the line on a single large drum and the use of a carousel for the snoods enables a great saving to be made in the space of the gear occupies on deck.

The traditional method requires 20 baskets for a line with 4,000 hooks, and even if GRP bins are used, seven of these (holding 600 hooks each) are required.

5 **Easier handling.** The use of snood clips and an efficient storage system enables longlining to be carried out with a relatively inexperienced crew. Traditional longlining requires a well-practiced crew to work the gear efficiently without major tangles.

6 **Easier repairs.** Since the snoods can be unclipped from the line, damaged hooks can simply be rejected. With traditional lines, a lengthy period has to be spent overhauling to maintain the hooks in good condition.



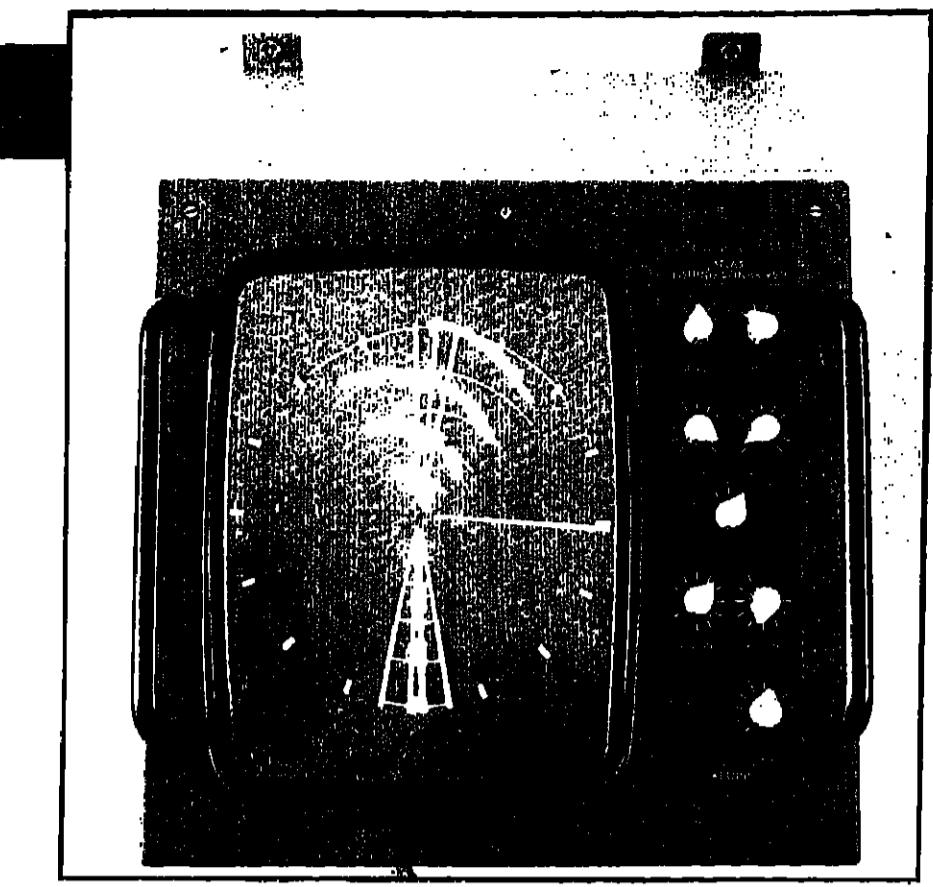


Fig. 1. Display Unit of the Atlas Fishing Sonar 950

**S. MROSS of Krupp Atlas Elektronik describes his company's new concept in long-range fish detection**

# Fishing with the Atlas 950 panoramic sonar...

## Presented at the Aberdeen show

DURING the Scottish Fishing Exhibition Catch '78 in Aberdeen Krupp Atlas Elektronik presented, for the first time to the fishing community, their latest development in fish detection, the Atlas Fishing Sonar 950.

The most interesting features of the equipment are the new display unit (Fig. 1) and the hydroacoustic multi-beam transceiver system. The latter enables a sector of 90 degrees to be illuminated by each single ping.

For the presentation of the huge amount of information received during each sounding period, a panoramic PPI display, using a 44 cm TV tube, has been chosen.

As the total sonar information is stored by a micro-electronic memory, a steady, flicker-free, daylight picture is generated, allowing a relaxed observation of the screen.

The total picture innovation on the screen is as fast as the pulse repetition rate, resulting in an instantaneous recognition of shoals and their position relative to the vessel.

### Two planes

Targets are shown simultaneously in two planes, one perpendicular to the other (e.g. horizontal and vertical). The position and the geometric pattern of the shoal are presented true-to-scale on a brilliance modulated, rudder-like indication.

Signal to noise ratio for reverberation and ship's own noise is much improved due to a special signal processing method, the so-called "piling" of up to four successive pictures.

Interference from other sonars and sounders is also rejected by means of this geometric picture processing. So the "false alarm" rate (misleading echoes) is extremely low. The viewer can almost be sure that the echoes seen on the screen, are indicative of fish.

### Listening

In parallel to the optical display, is a new sectoramic listening channel, which facilitates the identification of echo direction and the correlation to the echo frequency.

It will be clear that with the panoramic display described above for the Atlas Fishing Sonar 950, the old step-by-step searchlight ranging method is unsuitable.

With the very long period needed for scanning a greater sector (up to 10 minutes for 210° degrees), the ship's

movement during this time and the occurrence of "dead zones" would result in an uncorrelated, distorted and, hence, untrue picture.

Therefore, we decided to depart from the old searchlight sonar principle, introducing a powerful multi-beam acoustic illumination of the sea with a multi-channel reception.

The output of this system is the multi-element high-power PZT ceramic transducer, which has been employed for many years with the Atlas fish finding equipment.

This transducer transmits stronger pulses than any other system known. Equally important is the possibility whereby groups of elements can be built up with the uniformly high accuracy, essential for the application of so-called "phase synthesis" methods.

### Beam pattern

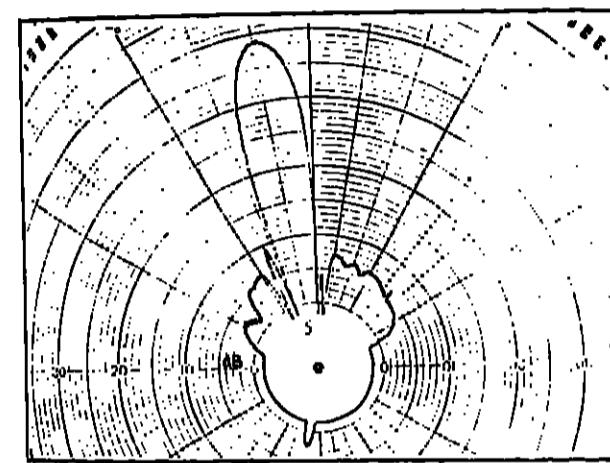
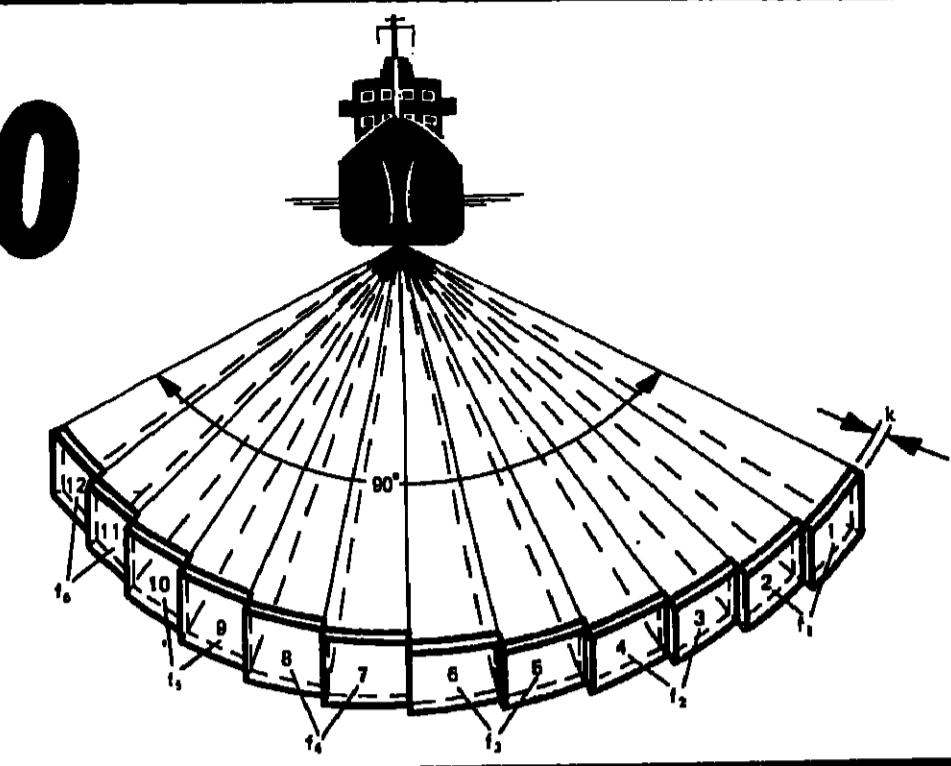
By this technique, the beam pattern and different beam directions can be formed electronically. This allows super-fast electronic training of a sharply focussed transmission beam and a multi-channel reception system for echoes from different directions ("Preformed beams").

Finally, the side lobes of the beam pattern are considerably reduced, which is essential for the reduction of reverberation and other interference (Fig. 2).

Each transmission pulse of the Atlas Fishing Sonar 950 covers a sector of 90 degrees. It is radiated in the form of 12 wedges in a bundle of 12 beams (Fig. 3).

During reception, the 12 beams form 12 directional reception channels for a simultaneous reception in 12 overlapping segments for the 90 degree sector. This allows a maximum of availability.

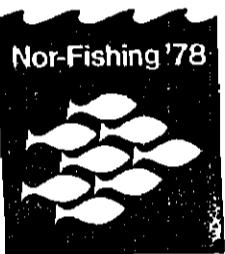
As an echo can appear in several adjacent channels, a special interpolation filter system is used. For the correct evaluation of the geometric pattern of the shoal to be displayed with other attitude on the screen.

Figs. 2 and 3.  
The acoustic multi-beam system

## THE LATEST NEWS ON FISHERIES

During the period 20-26 November The 7th International Fisheries Fair, Nor-Fishing '78 — will be held in Oslo. This is a trade fair of a high, international standard, where you will meet people from all over the world, with a strong interest in and knowledge of the fisheries industry. Nor-Fishing is considered to be one of the leading fisheries fairs in the world. Large and small firms present their products and news for the fisheries industry, and you will have a unique opportunity to find out about the very latest news in this field.

In conjunction with the exhibition we invite you to participate in the seminars to be held at The Sjølyst Centre.



Division, South Asia Projects Dept.,  
The World Bank, Washington D.C.  
Dr Eng. H. Nilssen-Moe, Norconsult  
A/S, Norway.

T. Oforokuma, Managing Director,  
Niger Sea Food Ltd., Nigeria.  
Tengku Ubudiah bin Abdul Radzi,  
Director General of Fisheries,  
Ministry of Agriculture and Fisheries,  
Malaysia.  
Miss Aida Eidi, Senior Adviser,  
FAO Investment Centre, Italy.

The third session will consist of a review of potential international collaboration and assistance in funding these investment needs. Consideration will be given to criteria for investment project preparation, to the role joint ventures and other forms of associations, to the lending activities of international and commercial banks and to such associated factors as suppliers' credit systems and credit insurance scheme.

Proceedings and discussions at the International seminar will be in English. Summer fee: Nkr. 1,200,- papers and luncheons included. Registrants will be charged 10% of the registration fee upon cancellation.

The national Nor-Fishing seminar:  
(in Norwegian only)  
EXPANSION POSSIBILITIES IN BLUE  
WATER FISHING  
24th Nov.  
Resources possibilities in blue whiting  
Area of distribution and catch possi-  
bilities.  
Fishing rights and economic import-  
ance.  
Catch-technical conditions  
Gear and catch techniques.  
Fish-finding equipment  
Market analysis and markets  
Panel debate on catch techniques and  
requirements of equipment.

The participation fee for the national  
seminar is Nkr. 200,- papers and  
luncheons included.  
Please return the filled-in coupon be-  
low. We will send you the invoice with  
confirmation of your participation.  
Seminar programs subject to altera-  
tion.

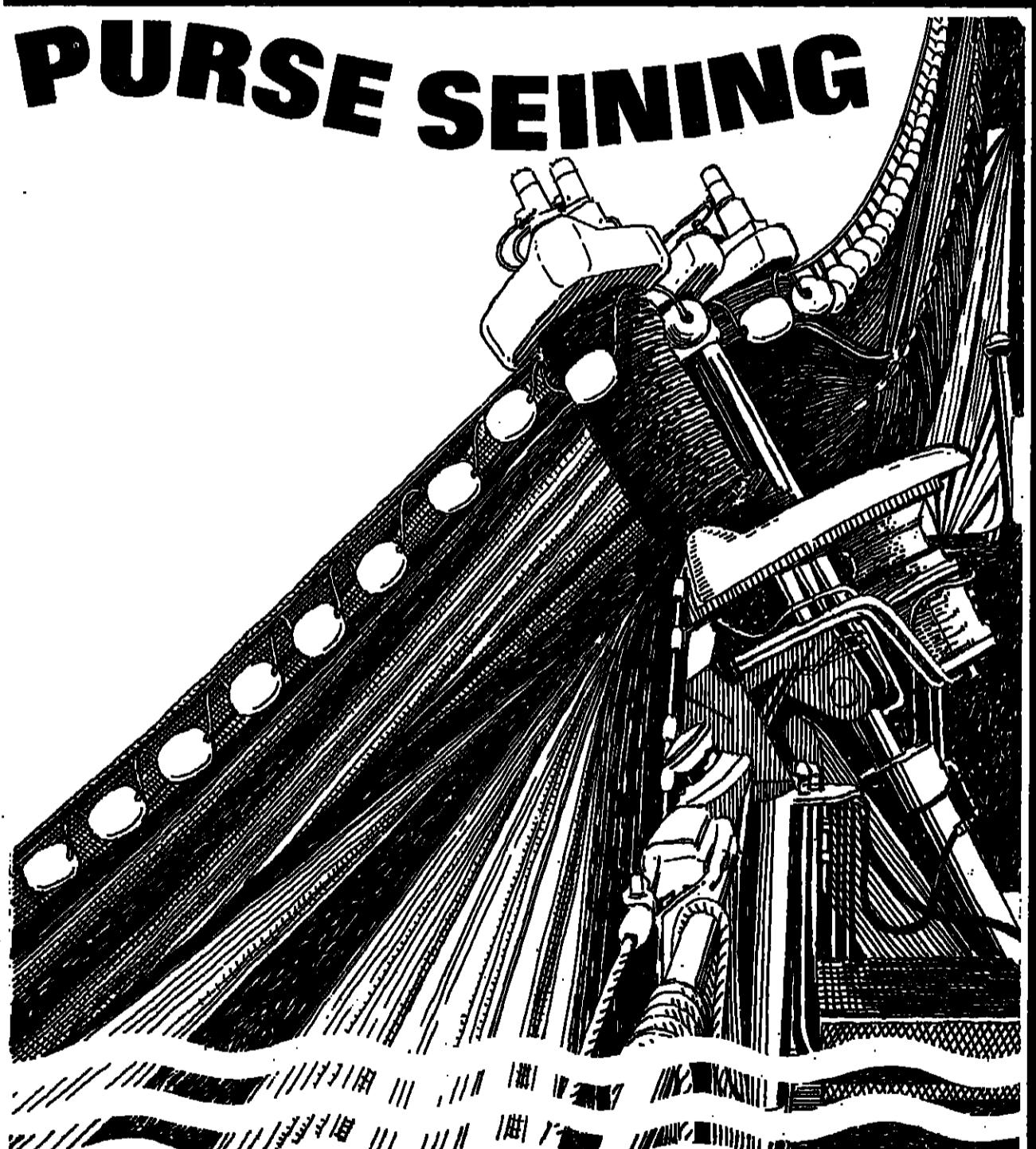
In November Oslo stands forth as a "city of light" as all of the Christmas displays begin at this time. For this reason you will have the chance to make pleasant shopping trips. In addition, we recommend visits to the many restaurants which offer typical Norwegian Christmas specialties.  
We hope you will visit Oslo in November, and have some memorable days with people from all over the world sharing your interests.

Mon. 12-18, Weekd. 10-18, Saturd. 10-18, Sund. 13-18. Exhibition, P.O. and catalogue Nkr. 20.  
For Nor-Fishing '78, Norges Verkemesse, P.O. Box 150 Skøyen, Oslo 2, Norway.

Please send me the exhibition catalogue  
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seminar dinner.

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## Shrimp peeler guide...

COMPLETE specifications of the Jonson Model 31T tail-on shrimp peeling and deveining machine are set out in a two-page bulletin available from Gregor Jonson Associates Inc. The machine described can process tail-on round, tail-on butterfly or tail-on western shrimp.

The bulletin explains how the machine can peel and devein shrimp in sizes from 10 to 90 lb. at a rate of 3800 an hour.

A processing capacity chart relates pounds an hour production — from 40 to 380 lb/hr, depending on shrimp size.

Bulletin 16 on the Model 31T machine can be obtained from Gregor Jonson Associates Inc., 1520 Berkeley Road, Highland Park, Illinois 60035, USA.

## product news

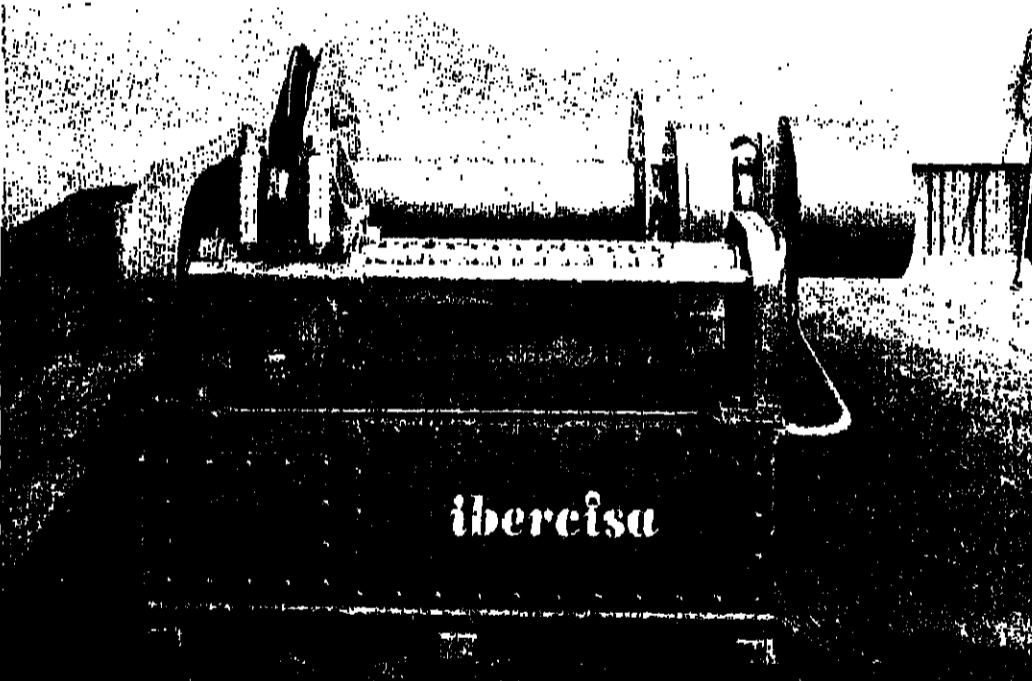
METHODS • GEAR • EQUIPMENT  
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# TRAWL TESTS IN FLUME TANK

**British firm adds to its wide range of nets**

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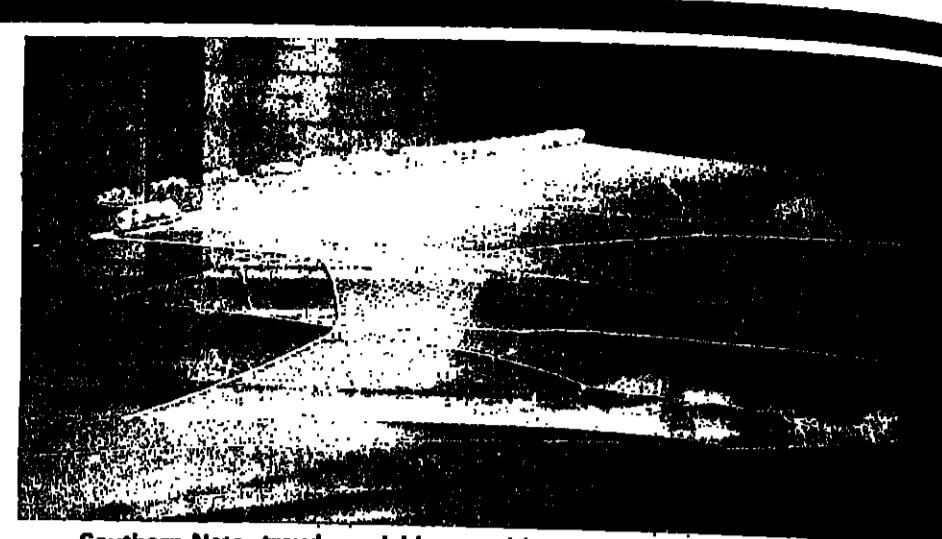
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Southern Nets trawl model is tested in the British WFA's flume tank.

SOUTHERN Nets of Rye, Sussex, is opening new premises for the production of trawls, which will include the new 400 series wing trawls for round fish.

The WFA flume tank in Hull has been used by the company for one-fifth scale model tests of the ten-fathom wing trawl. The tests indicate the best possible combination of bridle length, otter board size, float arrangement and weight and type of groundrope rig.

"The flume tank facilities are particularly useful for the fine tailoring required of any new trawl design," says Southern Nets.

### Popular

Another trawl being tested is the 600 series Inca. This is a high-lift combination trawl for round and flat fish. It is claimed to have proved popular for catching cod, bass, whiting, cuttle fish and squid.

As with the Southern Nets wing trawls, Inca trawls are available in sizes up to and including 16 fathoms on the groundrope and are supplied with all rigging details.

The company says its 200 series of flatfish trawls "continues to be a best-seller." The range has now been increased to 16 fathoms.

Trawls are usually supplied "off the shelf" but they can be custom-made to individual requirements.

### Extra

Southern Nets also makes beam trawls. These have light or heavy grade synthetic fibre webbing and beam sizes range from 6, 8, 10, 12 to 14 ft. Heavy-duty shrimp cod-ends are supplied as an extra.

The company has perfected its trawls with the help of Grimsby College of Technology's fishing gear consultant, C. C. Radcliffe, from designs by managing director C. E. Holland.

To meet increasing demands through the swing to inshore fishing and trammel net fish, Southern Nets supplies a full range of materials necessary for making nets for these methods.

Gill nets from monofilament or nylon are also available in many different sizes. They are supplied fully rigged or in sheet form with all accessories for rigging.

## Deutz engines in seven small trawlers

THE SEVENTH and latest Castlewood class trawler built by the Wood Group of Aberdeen, relives, like her six sister vessels, on a Deutz diesel engine for main propulsion.

According to the Wood Group (Trawlers) Division, Deutz 716 model diesel engines were chosen early in the design stage of the Castlewood class vessels because they were of low profile and compact build. This meant that the engine house could be kept to minimum proportions.

The engines have proved exceptionally reliable, according to a Wood Group spokesman. "The only change we would make in future," he said, "would be to use the

- slightly more powerful 816 model Deutz, because some of our skippers have said they could use even more power when trawling, although the boats are mostly engaged in seine-net fishing."
- Compact, occupies little floor space.
- Operated at a fraction of labour cost of traditional methods.
- Rapid drying or curing time.
- Simple to operate and flexible for varying throughput demands.
- Wastage of product during cure eliminated.
- Supplied in unit form and only requires wiring and chimney connection on site.
- Now incorporates fully automatic smoke producer as illustrated.

The boats are run by independent skippers working in conjunction with the Wood Group.

## Hauler changes with the fishing

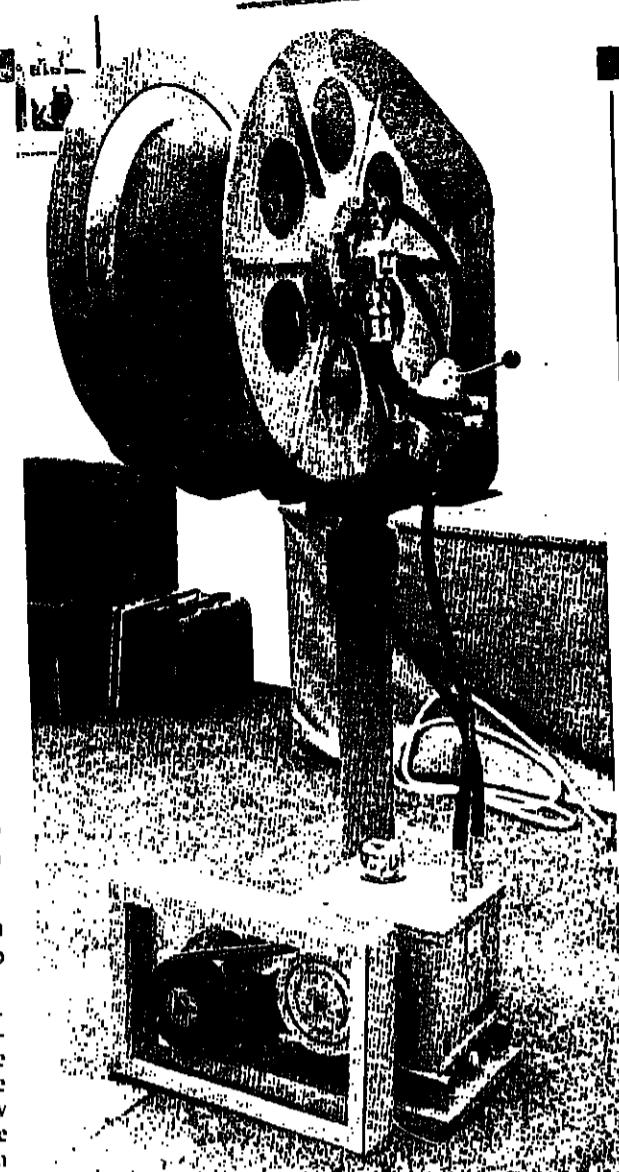
ONE of the problems faced by the owner of the small inshore boat seeking to mechanise the handling of his gear is that of changing patterns of fishing, from season to season, species to species and area to area.

He needs an economical machine that will enable him to take on anything from gill netting to lobster potting to long lining.

According to Mr. H. F. Macintosh, founder and original designer of the Cattermarine haulers, the slave hauler wheels and new lining were first tried out in the boat *Michael Harvey* in crabbing and with a Welsh lobster potter three years ago.

The Cattermarine one ton and 0.75 ton pot hauler with capstan head also gives flexibility to the inshore fisherman.

If he is fishing rough grounds where there may be



Cattermarine hydraulic net and pot hauler.

fasteners, he can change from the slave hauler wheels with auto rope ejection to capstan head handling. The wheels are made of a heat-treated aluminium for lightness and resistance to corrosion.

Cattermarine's power pack was designed by the present manufacturers of the haulers, Drum Engineering Ltd. It consists of a two-gallon cast aluminium tank containing the pump, relief valve and filter. An electro-magnetic clutch is built into the pulley wheel drive and is switch-operated from the wheelhouse.

An air cooler is used for flows of more than 4.5 gallons min. such as in the 33 ft. boat *Flyer II*, owned by Mr. A. Henley and working out of Bembridge, Isle of Wight.

Further information about the Cattermarine range can be obtained from Mr. Macintosh, 15 Glenthorne Close, Stubbington, Hampshire, England.

## Winch control

KOBELT now offers a complete package of non-corrosive pneumatic controls for almost any marine and industrial winch system.

Available in the package are controls for slip clutches and brakes; three and four-way positioner cylinders and valves; motor speed controls; relay and interlocking valves.

The controls, made from silicon brass for durability and ductility to keep them price-competitive, carry a five-year warranty on all metal parts, and a two-year warranty on the synthetic seals.

Further information and names of distributors from: J. Kobelt Manufacturing, 235 E. 5th Avenue, Vancouver, B.C., Canada, V5T 1H2.



Kobelt four-way, hand-operated valve control.

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Defrosting plant capacity 10 tonnes thawing 40 Kilo blocks of Cod

## FISH PORTIONS FROM TRIMMINGS

THE BRITISH engineering firm Guyle Manufacturing of Great Yarmouth last year introduced a new system for reforming fish portions with frozen undersize fillets and trimmings. One of the machines has now been delivered to the State Ministry of Fisheries in Poland.

There it is to be used to process a range of products, including reformed scampi and sardines, high-grade fish fillets and other portions.

Further information about the system can be obtained from Mr. John Preston, managing director of Curlew Overseas Ltd. "It could be the

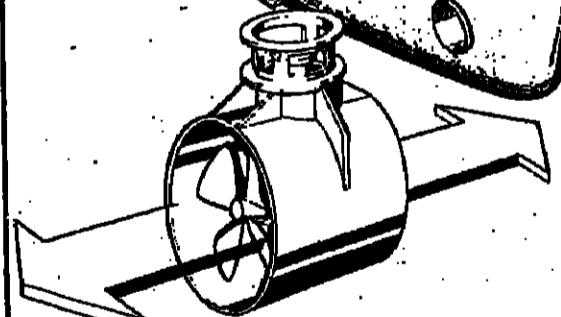
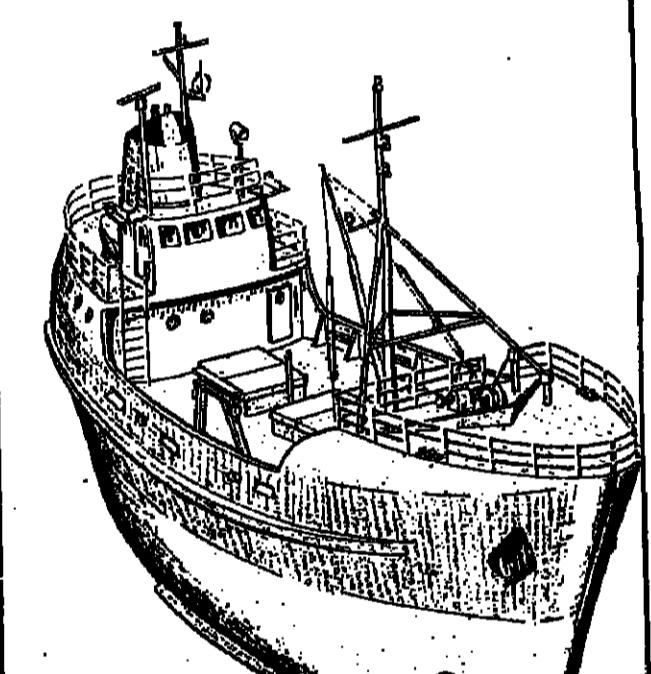
forerunner of many export orders for this machine, particularly in areas where there is a good supply of fish although perhaps in mixed species and sizes."

The Guyle reformed fish portion system was seen by many people in the fish industry when it was demonstrated at Torry Research Station during a programme connected with the utilisation of species such as blue whiting.

Further information about the system can be obtained from Mr. John Preston, managing director of Curlew Overseas Ltd., Riverside Works, Gorleston, Great Yarmouth, Norfolk, England.

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## Purse seine super winch

A NEW powerful hydraulic purse seine winch with pursing speeds nearly twice as fast as those of existing models has been introduced by Marine Construction & Design Co. (MARCO).

"The model WS444 winch, named the SuperSeiner II, is designed for fast handling of the larger nets that are being adopted now, particularly in the growing tuna fishery in the south-western Pacific," said Charles R. Hart, Marco vice president.

"As an example of the winch's speed and power, in less than 20 minutes the 450 hp SuperSeiner II can purse a tuna net 1,000 fathoms long and 25 strips deep."

The SuperSeiner II has two independent hydraulic drives, one for the main purse drum and one for the forward purse and tow line drums. Separate drives permit each end of the purse line to be hauled independently.

Each drive has two operating modes for optimum performance during all stages of purse seining. Increased

hauling speeds are available for pursing and increased line pull (more than 20 tons) is available for lifting the rings.

Marco has designed the winch with drum capacities and line pulls that allow the entire net to be pursed on either the main purse drum or forward purse drum. Thus, in the event of a roll-up, the net can be pursed even if the roll-up occurs near either end of the net.

Cable capacity of the main drum is 1,800 fathoms of 3/16 in (19 mm) wire.

Motivation for this work, says Petters, came from trials carried out on inshore fishing boats, including canoes, outriggers and small catamarans where the requirement was to produce the simplest possible propulsion system.

Exhaustive tests made on a variety of craft have proved the efficiency of the various systems, adds the company. "This work has proceeded with the knowledge and support of the British Ministry of Overseas Development and the Food and Agriculture Organization."

The "SuperSeiner II", a new hydraulic tuna purse seine winch from Marco

## CHANNEL METER RANGE

THE Channel Electronics 6000 Series portable digital pH metre measures 0-14 pH plus temperature over the range -30 deg. to +150 deg. C.R.T.

It is housed in a robust injection-moulded case with 10.2 mm height L.E.D.

readout. The series is claimed to offer fast and accurate measurement in three basic models.

Model 6060 provides pH measurement to a resolution of 0.1 pH and Model 6080 to a resolution of 0.01 pH.

Temperature on both in-

struments is to a resolution of 1 deg. C. A third instrument, the Model 6090 offers -999 to +999 mV with a resolution of 1.0 mV.

Models 6060 and 6080 are supplied complete with combined plastic bodied pH electrode and steel-bodied temperature compensation/measurement probe.

Using standard MN1500 (manganese alkaline) batteries, the 6000 Series allows up to 35 hours continuous use or 60 hours intermittent use.

As an option, the instrument can be provided with type AA rechargeable cells plus a mains recharger unit. A further option is a good-quality carrying case which has a separate pocket for the probe.

Further information from Channel Electronics (Sussex) Ltd., P.O. Box 58, Seaford BN25 3JB, Sussex, England.

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Everything to hand... in the wheelhouse of the Sonne.

## WHERE IT'S ALL IN EASY REACH

EVERYTHING within easy reach to fish, navigate, communicate or manoeuvre.

This is the instrument-packed wheelhouse of the West German wet fish stern trawler *Sonne*.

Described in FNI in June, this compact ship is 54.2 metres long and is powered by an MaK 2400 hp engine. She was built by the Rieckmers Werft yard for Hochseefischerei Nordstern AG.

Her main electronic equipment includes Krupp Atlas Fischfinder 781 echosounder and 781 netsonde (seen middle left) and two Atlas radars, a 6500S and a 5500.

variety of duties.

As with all marine division products, the concept is covered by the Petter "Blue Diamond" deal. This provides free installation guidance to boatbuilders and training courses at a nominal fee.

## Inboard engines for open boats

THE MARINE division of Petters Ltd. has gone back to basics in order to create a new range of engines utilising "A" range lightweights units.

Aimed at less sophisticated markets than the Petter Mini-Six and Mini-Twin, the new modular engines are offered as direct drive units with or without a clutch, or with a gearbox.

Motivation for this work, says Petters, came from trials carried out on inshore fishing boats, including canoes, outriggers and small catamarans where the requirement was to produce the simplest possible propulsion system.

Exhaustive tests made on a variety of craft have proved the efficiency of the various systems, adds the company. "This work has proceeded with the knowledge and support of the British Ministry of Overseas Development and the Food and Agriculture Organization."

Based on this research, Petters says it can now offer a range of equipment suitable for small open boats at overall costs which will be competitive in operation with many existing outboard engines.

In these circumstances "the inherent benefits of diesel in terms of its economy, simplicity and reliability are seen to advantage."

The units are based on similar engines which have gained wide acceptance in a

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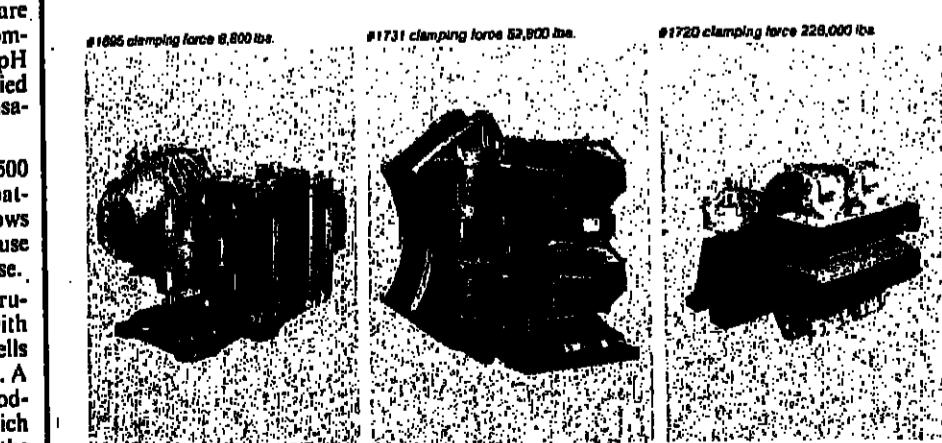
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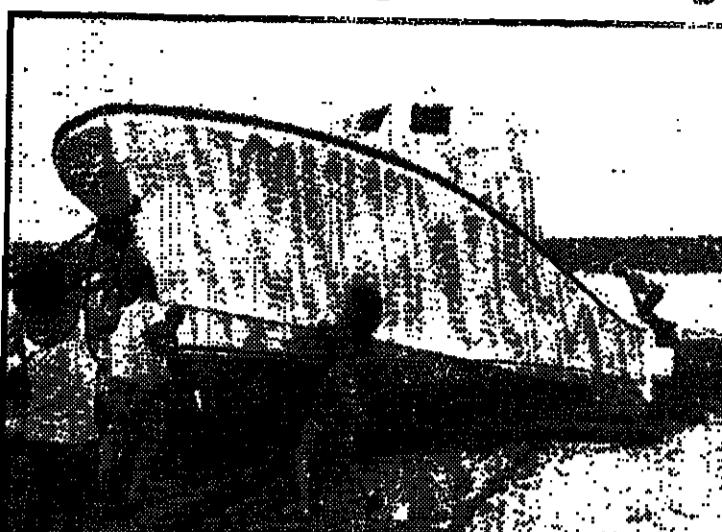
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Easy-to-use kits with pre-fabricated frames can be developed based on local designs, such as the high speed shrimper pictured above. It was built by a 19-year-old fisherman, working alone, in under 3 months.

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## The U.S. Fishing Industry WHAT'S IN IT FOR YOU?

If you're importing or exporting fish or fishing gear, the U.S. commercial fisheries are important. The world fishing picture is rapidly changing as coastal nations take control of their marine resources. Nations dependent on their distant-water fleets are finding their fisheries supplies dwindling as strict regulations limit their efforts off foreign shores.

What's available? What's going to be available? How do you keep informed on the rapidly changing and complex U.S. fishing policies, needs and opportunities?

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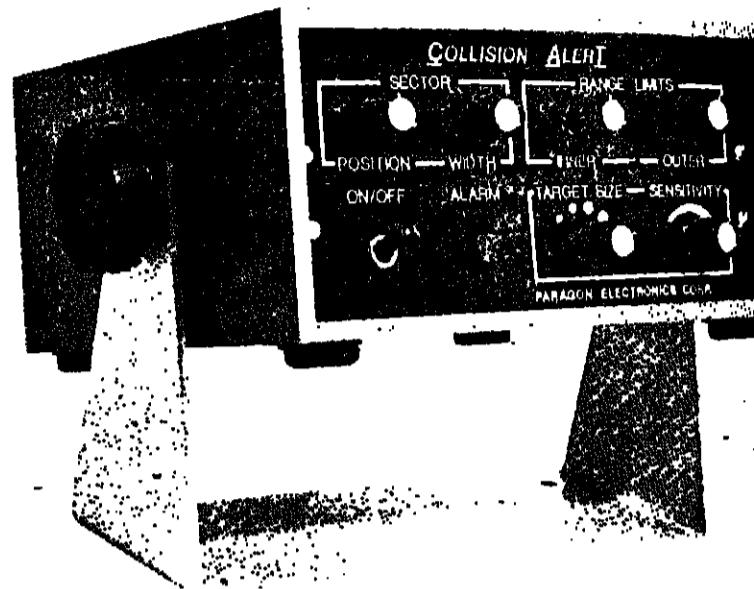
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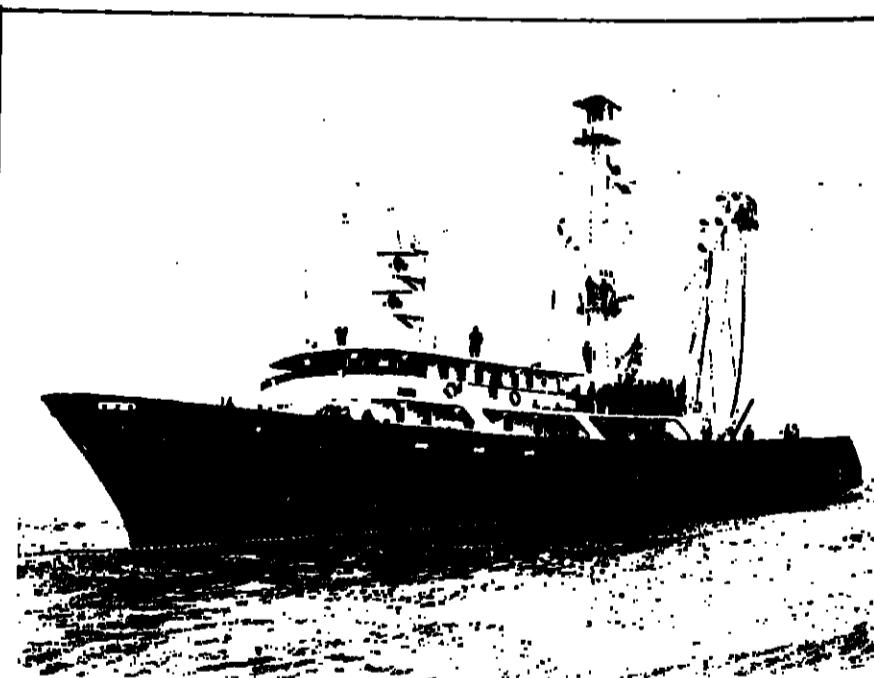
## IDENTIFY FRIEND OR FOE

Not all targets on a radar screen are threats. There is a difference between each. And the difference may be catastrophic!



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ON BEHALF of the many thousands of trawlers who have benefited from the pages of the *Trawlermen's Handbook*, I extend congratulations to Commander R. C. Oliver and his wife on the recent celebration of their Golden Wedding. This they did by donating £250 to Exmouth Scanner Appeal Fund because "of the thousands of local East Devon people it will help."

We in Fishing News Books have a particular regard for Commander Oliver, not only for his kindly personality, but because of the great service done by him in converting the original little booklet known as the "Handy Billy" among early trawlermen into a work which has rendered outstanding service to the fishing community not only of Britain but of many other countries as well. For, since its first publication in 1965, thousands of copies have been distributed the world over.

### practical tasks involving construction

for fishing minkfish, carp, trout, turbot, tilapia, catfish, threadfin, and variations into sea water culture, pond culture with supporting activities in duck and pig raising—in fact every conceivable variation seems covered.

3. **Culture of Crustaceans.** This specialised field has 15 papers and 27 contributors dealing with the various shrimps and prawns in sea water and fresh as well as lobsters and the king crab.

4. **Culture of Molluscs.** Eleven papers and 16 authors deal not only with the edible oyster on a commercial scale but with the pearl oyster, the mussel, the scallop and it pays special attention to oyster mortalities and their control—and even the growing of oysters on mangroves.

5. **Culture of Algae and Seaweeds.** Three papers and four authors suffice for treatment of this specialised activity for which enthusiasts predict much potential.

6. **Aquaculture in Raceways, Cages and Enclosures.** Nine papers and 13 authors deal with special enterprises here, in the Far East, Africa, Norway and North America and tell of success in rearing yellow tail, turbot and Chinese carp on traditional fish farms in Asia.

In particular he there concentrated on supplementing and expanding the work I have mentioned on behalf of the Hull Steam Trawlers Mutual Insurance and Protection Company Ltd. It was immediately successful as a major contribution of high value to fishermen and their general safety.

### Lasting tribute

Since then, it has been steadily revised and improved, and is now standard and in itself a lasting tribute to the pioneering work done on it by Commander Oliver. To him and his bride of 50 years we extend our heartfelt good wishes for continued happiness in their well-earned retirement.

I am very conscious of the debt owed to authors who devote knowledge, time and research to the compilation of works of practical and reference value. And so I dedicate now the outstanding value of a million-word plus volume on which we are currently engaged. This is *Advances in Aquaculture*, the masterpiece organised by Dr. T. V. R. Pillay for FAO. I am full of admiration for its comprehensiveness and scope.

Into it are packed the contributions of 191 of the leading scientists of the world covering every major aspect of the modern practice of aquaculture. Their knowledge and research is embodied in a total of 116 papers spread over ten chapters.

### Logically conceived

It is worthwhile listing these chapters for they show in very marked fashion the logical manner in which the book has been conceived and presented by Dr. Pillay and his associates. First of all they had to carefully peruse and assess the merit and content of the original papers and reduce duplication or superfluity wherever possible. Then came collation to chapters.

In these ten chapters and their accompanying papers, there is given the very latest round-up of advanced knowledge:

1. **World Aquaculture and Its Future Role.** Nineteen authors provide 17 papers ranging over all effective world territories and major activities with social and economic implications as well as practical requirements and details.

2. **Finfish Culture in Ponds.** Here 46 authors in 29 papers (several papers are collective efforts) get down to

the special gear about 1000 tons of pain-to-sized nodules from a depth of three miles. And scientific investigators from the National Oceanic and Atmospheric Administration, said they could not detect any deleterious effects from their operations. But it is the riches they MIGHT get that are worrying the Third World countries and they want some pickings. So there's a talkfest still ahead.

## walkabout talkabout

with Arthur J Heighway



## FAO lists science papers

FAO has collated details of serial publications (journals, report series, etc.) which regularly include papers on water environments and fisheries. Its first list was published in 1963.

Meeting demand for a revised version, FAO issued a preliminary edition with 1200 titles in 1975. Another 600 titles were included in a supplement in 1976, and 573 more in 1977. The supplement this year lists 646 titles.

World List of Aquatic Sciences and Fisheries, Serial Titles, Ref. FID/T Suppl.3. Obtainable from FAO, Rome.

## A STITCH IN TIME SAVES NINE...

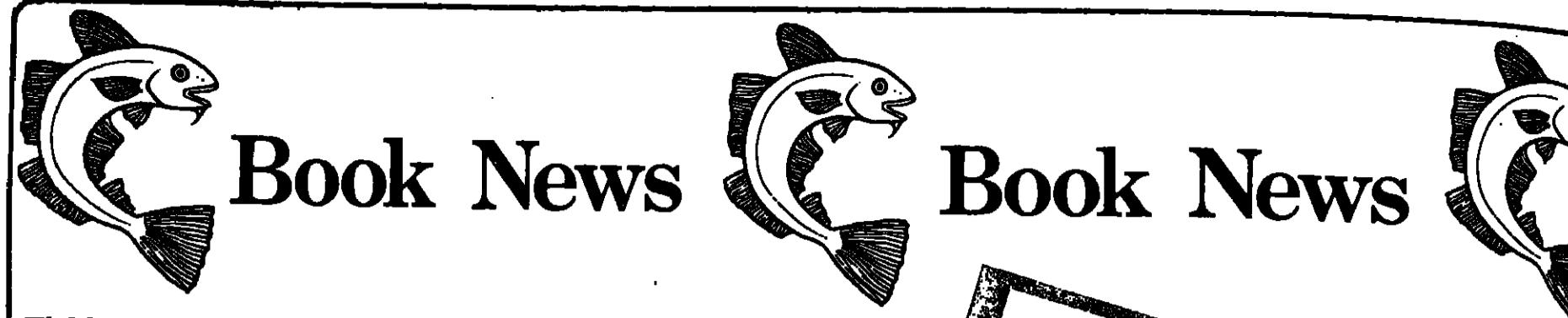
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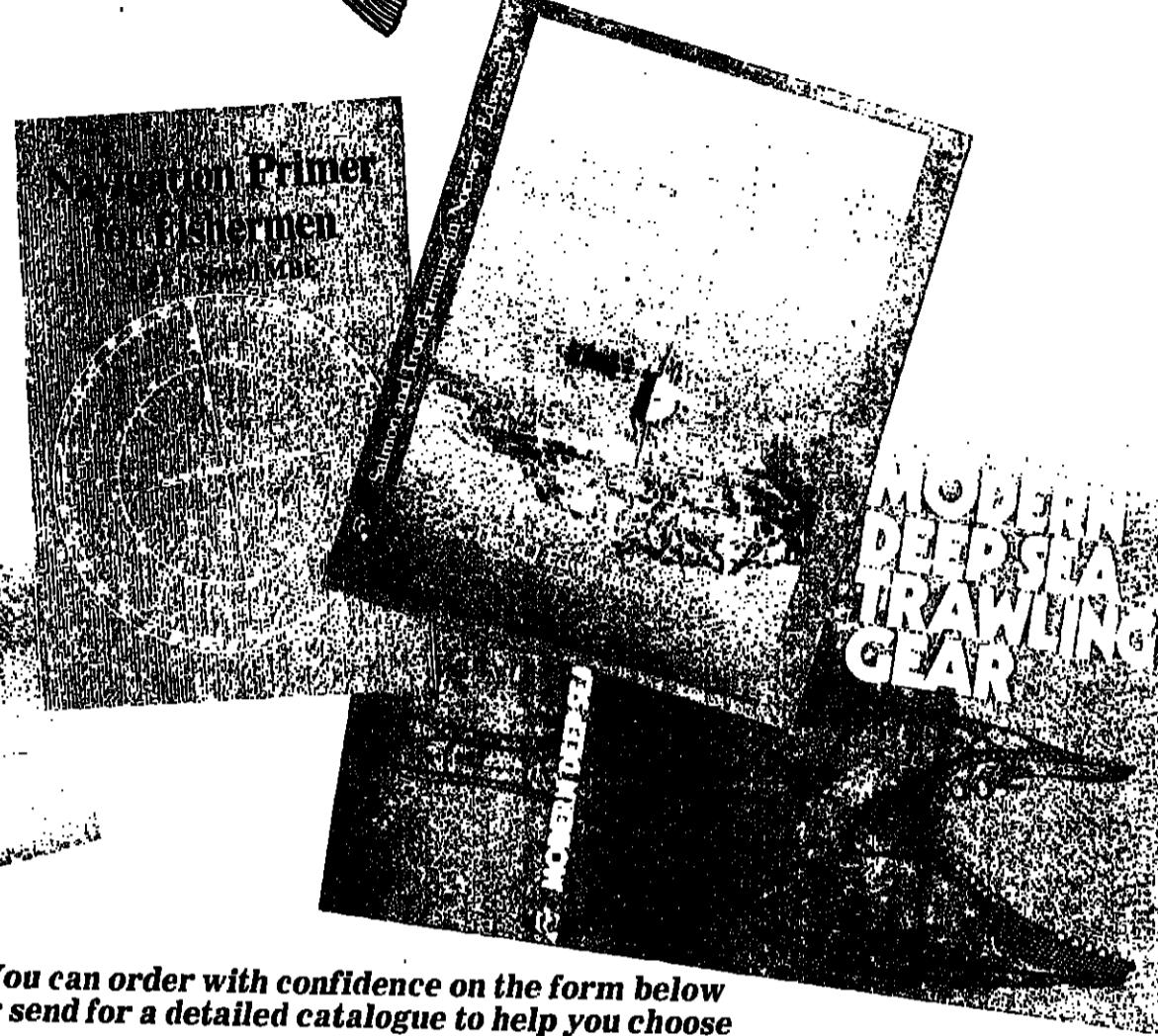
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## Book News



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## The books page

BY EARLY this year, five *Gorizont*-class giant trawlers had been built in the USSR for the country's deepsea fishing fleet.

The name ship of the class was sunk in a collision off the Isle of Wight in 1975, but the *Admiral Golovko*, *Aleksandr Tortsyev*, *Ivan Sivko* and *Petr Sgibnev* are among the 30 or so Soviet trawlers larger than 4,000 gross tons.

Brief details of this class and all the other big Soviet fishing ships are given in the Third Revised Edition of *Soviet Merchant Ships*.

The *Gorizont* trawlers are 111.38 metres long and have a gross tonnage of 4,537 tons. Each ship is powered by two *Sloda* six-cylinder engines developing a total of 7,000 bhp.

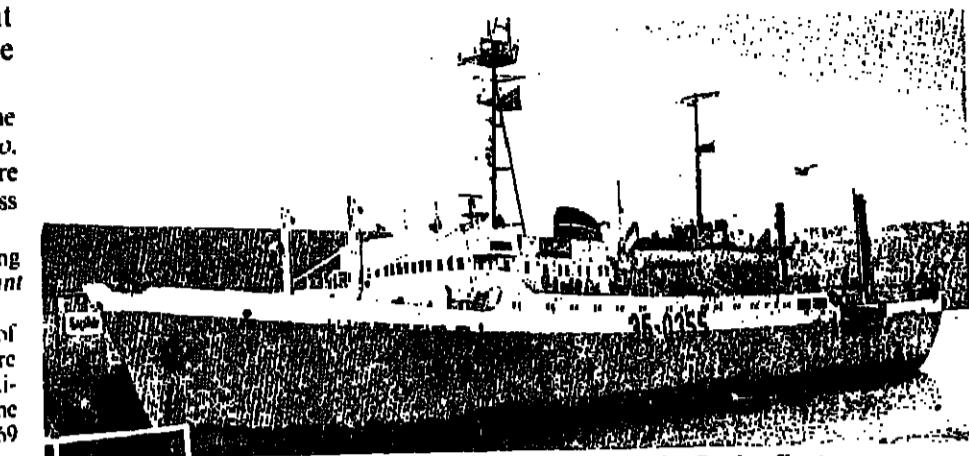
Reorganised "in the light of new information," the factory trawler section of *Soviet Merchant Ships* now lists some 850 trawlers. They include the first ten *Pushkin*-class vessels (built in Kiel in 1955 and 1956), with which the Soviet fishing industry began its massive introduction of refrigerated and processing stern trawlers.

This first order was followed by one for 14 placed with the same yard, Kiel, Howaldtswerke.

Following these ships from 1958 onward came the procession of big trawlers that took Soviet fishing onto the oceans of the world.

The East German yards

# THE GIANTS IN RUSSIA'S FLEET...



One of the 220 Mayakovski class trawlers in the Soviet fleet.

yard in Leningrad built three 18,455 ships that were basically fish meal factories.

But Poland has been the major supplier. Starting in 1963 with the *B64* class *Pionersk*, *Stocznia Gdansk* delivered 14 by the end of 1967.

It followed these with the *Professor Baranov* class in 1967 and by the end of 1975 had delivered 35. It is now building its new B-670 class.

Also from a yard in Gdansk is the latest in what could be a new series of Polish-designed and built giant factory trawlers.

### Trawler

She is many steps away in size, in capacity and performance from the first *Pushkin*-class in 1955. Now, thanks to the meticulous compilation of Ambrose Greenway (and the late Jerry Curtis), it is possible to trace these steps and to put ships, dimensions, builders and dates of those daunting totals of ships turned out in series of 20s, 50s and even 100s.

Published by Kenneth Mason, Homewell, Havant, Hampshire, PO9 1EF, England. 204 pages. Price £6 (plus postage).

followed the *Tropik* with some 140 *Atlantik*-type trawlers. These 83.9 metre long and of 1,500 gross tons. About 50 of these trawlers are believed to be on order. Each has a bulbous bow and is powered by a 2,200 hp *Skoda* engine.

Also in Nikolayev, the *Okean* yard was turning out another class, the *Altay* trawlers of 107.5 metres and had completed 31 by 1975.

From 1974, the *Luchegorsk* evolved into the *Kronstadt* type, 83.8 metres long, with modified funnel and superstructure. Sixty-eight of these ships were built up to the end of 1977.

In Klaipeda, the *Baltiyu* yard has, since 1974, been turning out a series of *Barentsyevo More* class trawlers. These 83.2 metre long vessels were built in Chernomorsk yard in Stralsund until 1973. Then, in 1975 and 1976 VEB Mathias Thesen built 24 in Wisnur.

Meanwhile, the Stralsund

yard had gone over to the new

Super *Atlantik* class, starting

with the prototype *Promety* in 1971. By the end of 1974, the Soviet industry has taken delivery of some 75 of this latest class.

In Russian yards, the *Mayakovski* design gave way

from 1970 to the *Luchegorsk* type of 83.3 metres built in

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